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ALPHABET OF NATURE.

THE

ALPHABET OF NATURE;

OR,

CONTRIBUTIONS TOWARDS A MORE ACCURATE ANALYSIS
AND SYMBOLIZATION OF SPOKEN SOUNDS;
WITH SOME ACCOUNT OF THE PRINCIPAL PHONETICAL
ALPHABETS HITHERTO PROPOSED.

BY

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CONTENTS.

PART I. ANALYSIS OF SPOKEN SOUNDS.

CHAPTER 1. ON SOUND IN GENERAL . . . . . pp. 1—19

Sound a sensation, 1. Caused by undulations, 2. Sir J. Herschell's explanation of undulations, 2—8. "Sound travels," 9. Its velocity, 10. Musical Sounds, 11—15. Classification of instruments according to the mode in which vibration is produced, 15. Sir J. Herschell's description of the organs of voice, 16—18. Place of Phonetics among the sciences, 19.

CHAPTER 2. ON ARTICULATE SPEECH IN GENERAL . pp. 19—22

Phenomenon of articulation, 19, 20. Voice and its modifications, 21. Three kinds of action of the organs, and two modes in which each takes effect, 21. Etymology, 22.

CHAPTER 3. ON THE VOWELS IN GENERAL . . . pp. 22—39

Three Phenician vowels, 22. Character and letter, 23. Vowels form a scale, and are distinguished by contrast, 23,24. Their number infinite, 24. Analysis of sound is an analysis of particular individual sensation, 25. Use of speaking machines, 25,26. Professor Wheatstone's definition of a vowel, 26. Professor Willis's paper "on the vowel sounds," 27—35. Professor Wheatstone on the identity of vowel qualities and multiple resonance, 36—39.

CHAPTER 4. ON THE CONSONANTS IN GENERAL . . pp. 39—44

Consonants properly an ajustment of the parts of the mouth, 39. Consonant characters anciently included the voice, 40. Plan adopted in modern alphabets, 41. Can a consonant sound by itself? 41. Whispered and spoken consonants, 42. Dr. Orpen's opinion of syllables without vowels, 42,43. Difficulties attending the analysis of spoken sounds, 44.

CHAPTER 5. ON THE VOWELS IN DETAIL . . . . pp. 44—73

Section 1. *On the Long Vowels*, 44—53. The seven vowels, ī, ē, ā, ō, u̱, o̱, ū, 45. Why so arranged, 45. Distributed into three classes, 46. Mr. Cull's opinion, 46. Dr. Orpen's account of the mechanism by which these vowels are produced, 46—48. Intermediate vowels, 48. î, 48. ê, â, 49. ô, û̱, û, 50. Vowel circle, 50. Linear arrangement, 51. *Table of Long Vowels*, 51,52. General vowel notation, 53.

Section 2. *On the Short Vowels*, 53—60. How distinguished from the long, 54. *Table of Short Vowels*, 54,55. Different from unaccented long vowels, 55. On the correspondence between long and short vowels, 56. Opinion of grammarians as to the relation between long and short vowels, 57. Distinguishing characteristics of the *full* vowels, 58. What is the sound in the last syllables of *able, schism, burden, ochre*? 59—60.

Section 3. *On the Stopped Vowels*, 61—71. There are as many different varieties of every vowel as there are consonants, and *vice versâ*, 61. Analysis of stopped vowels, 61,62. They can not be pronounced without the aid of a consonant, 63. How related to full vowels, 63,64. *Combined Table of Long, Short, and Stopped Vowels*, 64. Consideration of each stopped vowel singly, 65—67. Grammatical correspondence of long and stopped vowels in English, 67. Does a stopped vowel occur before r? 68. Relation between short and stopped vowels, 69. The same symbol may represent long and short vowels, but not short and stopped, 70. Dr. Rapp's notation, 71. Quantity of stopped vowels, 71.

Section 4. *On the Nasal Vowels,* 71—73. How distinguished from the others, 71. French and Polish, 72. Portuguese, 73. *Table of Nasal Vowels,* 73.

CHAPTER 6. ON THE COMPOUND VOWELS . . . pp. 74—91

Comparison of diphthongs with musical chords, 74. Characteristic of diphthongs, 75. Grammatical theory, 75.

Section 1. *On the Improper Diphthongs,* 76—81. Definition, 76. Evolution of the coalescent y, 76. The connection between ĭ and the throat consonants, 77. *Table of Y. Diphthongs,* 71. Evolution of the coalescent w, 79. *Table of W. Diphthongs,* 79. *Table for shewing the difference between Successive Vowels and Improper Diphthongs,* 80. The whispered yh and wh, 80.

Section 2. *On the Proper Diphthongs,* 81—85. Greater difficulties which they present, 81. Different degrees of union between their elements, 81. Consideration of the several I diphthongs, 82,83. *Table of Proper Diphthongs ending in i,* 83. Second class of proper diphthongs, 84. *Table of Proper Diphthongs ending in u,* 85.

Section 3. *On the Quasi Diphthongs,* 85—87. Their characteristic, 85. Frequent in Southern English, 86. *Table of Quasi-Diphthongs,* 86. Mr. Smart's opinion that *payer, stare—slower, lore—brewer, poor*—are perfect rhymes, considered, 87.

Section 4. *On Triphthongs,* 88—91. How formed, 88. *Tables of Proper Y and W Triphthongs,* 88. *Tables of Improper Y, Quasi Y and Quasi W Triphthongs,* 89. French *oi,* 90.

CHAPTER 7. ON THE BREATHINGS . . . . . . pp. 91—95

Distinction between breath and voice, 91. The breathings considered separately, 92—94. Cry of a sheep, 94. Examples of the occurrence of the breathings, 95.

CHAPTER 8. ON THE SIMPLE CONSONANTS . . . pp. 95—128

Distribution of the consonants into classes, and similar distribution of the vowels, 96.

Section 1. *On the Spoken Consonants,* 96—116. Division into Labial, Palatal, and Guttural, with subdivisions, 97. Distinction between explosive and continuous, 98. Initial, Final, Medial, and Double values, 98. I.—ORALS. 1. EXPLOSIVES. B b, 98,9. D d, 100. G g, 100,1. Notation for the Initial, Final, Medial, and Double values, 102. I.—ORALS. 2—CONTINUOUS. 1′—*Sibilants.* W w, 103. Vh vh, 104. The German w and English v compared, 105. V v, 106. Dh dh, 107. Z z, 108. Zh zh, 108. Y y, 109. Jh jh, 109. Gh gh, 109. The three classes of Sibilants, 110. 2′. *Trills.* 'B ʙ, 110. 'L ʟ, 111. R r, 111. L l, 112. 'G ɢ, 114. II.—NASALS. CONTINUOUS. M m, Ṇ n, 'N ɴ, 115.

Section 2. *On the Whispered Consonants,* 116—124. Distinction between these and the former, 116. I.—ORALS. 1.—EXPLOSIVES, P p; T t; K k, 117. Indifferent π, τ, κ, 118. I.—ORALS. 2.—CONTINUOUS. 1′.—*Sibilants.* Wh wh, 119. Fh fh, 119. F f, 119. Th th; S s; Sh sh, 120. Yh yh; Ch ch; Kh kh, 121. 2.′—*Trills.* 'Bh ʙh, 121. 'Lh ʟh; Rh rh; Lh lh, 122. 'Gh ɢh, 123. II.—NASALS. CONTINUOUS. Mh mh; Nh nh; 'Nh ɴh, 123. *Table of the Natural Consonants,* 124.

Section 3. *On the Multiformity of Consonants,* 125.

Section 4. *On the Strengthened Consonants,* 126,7. ‘D ᴅ; ‘T ᴛ; Q q; ‘Z ᴢ; ‘S ç; Qh qh, 126. ŋ, 127.

Section 5. *On the Weakened Consonants,* 127,8.

PART II. SYNTHESIS OF SPOKEN SOUNDS.

CHAPTER 1. ON THE FORMATION OF SYLLABLES AND CONSONANTAL SEQUENCES . . . . pp. 129—139

Definition of a syllable, 129. A vowel may be a syllable, 130. I.—*Initial Combinations,* 130. Enunciation of the general law, 131. Combinations of two consonants, 131 Peculiarity of combinations with whispered continuous consonants, 132. Combinations with l and r, 133. Triple combinations, 134. II.—*Final Combinations*. Difficulty started, 135. A doubled consonant, 135. Examination of the combinations tsh, dzh, 136. General rule affecting the combinations of spoken and whispered consonants, 137. III. *Medial Combinations*, 138. Reason for former notation, 139.

CHAPTER 2. ON EMPHASIS, ACCENT, AND QUANTITY pp. 139—145

Distinction between natural and artificial words, 140. Notation for accent, 141. Distinction between accent and emphasis, 141. Explanation of Quantity, 142. Not founded in nature, 144. Foreign accent, 145.

CHAPTER 3. THE TRANSITION ALPHABET . . . pp. 145—157

Definition of an "Alphabet of Nature," 145. Why impossible at present, 146. We only attempt to approximate to it, 146. Method of using our tables, 147. No standard of pronunciation, 148. THE TRANSITION ALPHABET, 150—151. Explanation of the indifferent vowel characters, 152. Position of accent, 153. Remarks on the Examples, 154. Example I. English, 155. Example II. German, 155. Example III. French, 156. Example IV. Italian, 157.

PART III. PHONETICAL ALPHABETS.

The great number of them that exist, 158. In what respect they differ from the "Transition Alphabet," 159. I. GENERAL ALPHABETS. 1.—*Wilkins*, 159. 2.—*Young*, 162. 3.—*Key*, 164. 4.—*Orpen*, 164. 5.—*Rapp*, 168. II. ENGLISH ALPHABETS. 1st. What are the elementary sounds in the English Language? 172. 1.—*Herschell*, 174. 2.—*Latham*, 176. 3.—*Smart*, 177. 4.—*Pitman*, 179. 2nd. How shall the elementary sounds in the English language be symbolized? 181. 3rd. Is it possible or expedient to bring a new and correctly phonetical alphabet into common use? (printed in phonotypes), 183. *Concluding Remark*, 189.

ADDITIONS AND CORRECTIONS, 191.

NOTE.

The sheets of the present edition have been worked off from the same types as were used for the *Phonotypic Journal*, in which the *Alphabet of Nature* originally appeared, additional copies having been taken at the time with a view to this separate publication. This must be our apology for the number of additions and corrections at the end of the work, and which would have been incorporated with the body of the work, had the present edition been a reprint. Very few of the corrections will be found of very great importance, but the Author would wish the additions to be, as much as possible, read in connection with the passages to which they refer, and would, therefore, recommend the reader to place a mark of reference at each of the passages in the text to which additions are made, prior to reading this Essay.

Directions to the Binder.—The outer edges of pp. 150, 151, must be turned in, in order that the Tables therein contained may not be injured when the leaves are ploughed.

THE
ALPHABET OF NATURE.

PART I. ANALYSIS OF SPOKEN SOUNDS.

CHAPTER 1.—ON SOUND IN GENERAL.

SOUND is a sensation, and is, therefore, like all other sensations, indefinable, as it is also inconceivable to those who have never experienced it. The end for which we have been permitted to enjoy this sensation is clearly most beneficent, and the conditions requisite for its existence can be easily traced; but *why* such an exquisite sensation should be occasioned by such conditions, is, like the causes of all other natural phenomena, a mystery we cannot fathom.

For the existence of this sensation in the usual condition of the body—for we are yet too ignorant of such unusual states as natural and artificial somnambulism to attempt including them in our investigations—it is necessary that there should be a certain nerve, called the *auditory nerve*, in a healthy state. Connected with this nerve are certain apparatuses, called the internal and external ear, differing very much in different animals, and most complicated in man. The exact use of all the parts of these apparatuses is not known, but they appear to be all, more or less, adapted to the common object of propagating and strengthening vibrations.(1)

The vibrations which these apparatuses serve to conduct, are, in the first place, communicated to them by an elastic medium, the air,(2) in

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(1.) For a general description of the several parts, see the article EAR, in the *Penny Cyclopædia*.

(2.) There are other elastic media and other means by which these vibrations may be produced, as by striking the solid bones of the skull, &c. A familiar instance of this kind is furnished by placing a watch between the teeth, the ears being closed; if there be no contact, the ticking will be scarcely perceptible, but if the teeth be closed upon it, the sound will be very loud and distinct. The *usual* method of producing vibrations is the only one that could be insisted on in the text, as being that method for which the apparatus of hearing appears to be especially constructed.

contact with the external ear, and in a state of *undulation*, caused by the action of some impulse previously given to it. As it is this undulation which, when coming in contact with any ear, causes it to experience the sensation of sound, it becomes of the utmost importance to our present subject to understand the nature of an undulation. We shall, therefore, make no apology for the introduction of the following lengthy quotation from Sir John Herschell's Treatise.(3)

"A general notion of the mode in which an impulse communicated to one portion of the air, or other elastic fluid, is diffused through the surrounding portions, and successively propagated to portions at a greater and greater distance from the original source of the motion, may be obtained by considering the way in which a tremor runs along a stretched cord, or in which waves excited in the surface of still water dilate themselves circularly, and propagate a motion impressed on one point of the surface in all directions to a distance. In the former case, conceive a blow given to a point in the middle of the cord, transversely to its length. The point to which the blow is given will be thrown out of the straight line, and a flexure, or angle, will be formed in that part. Owing, however, to the inertia(4) of the cord, the displacement of the particles in the first instant will be confined to the immediate neighbourhood of the point of impulse; so that the cord will not at once assume the state represented in fig. 1, consisting of two straight portions, AB, BC, forming a very obtuse angle, ABC; but rather that in fig. 2, No. 1, in which the greater part on either side AD, EC, retains its original position; and a small part, DBE, proportionate to the violence and suddenness of the blow, is, as it

Fig. 1.

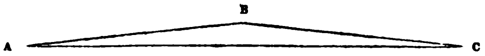
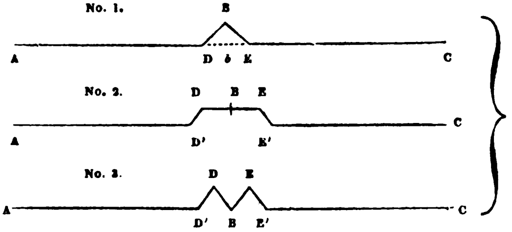


Fig. 2.



(3.) Article SOUND, in the *Encyclopædia Metropolitana*, par. 41—49.

(4.) The resistance or disinclination to motion which characterizes inanimate matter, is termed the *vis inertiæ*, or, literally, *the force of sluggishness*.

were, bulged out into an angular form, DBE. The particle at B, then, is solicited on both sides by the tension(5) of the cord in the directions BD, BE; but these tensions, which, in the quiescent state of the string, exactly counteracted each other, now only do so in respect of those parts of each which, when resolved,(6) act in directions parallel to DA, EC, respectively. The other resolved portions, perpendicular to these, conspire and urge the point B towards its point of departure, *b*. As there is no force to counteract this, (the impulse being supposed momentary,) B will obey their solicitation, and approach *b* with an accelerated velocity. But, action and reaction being equal and contrary, the same force by which the molecule E drags B *down*, will be exerted on E to drag it *up*, or out of the line; so that by the time B has performed half its course towards *b*, E will have been raised above the line, and will have acquired a velocity capable of carrying it still further in that direction. At this instant the cord will have assumed the figure AD′DBEE′C (No. 2.) At the next moment, the forces are reversed, B then tends to drag both D and E down to the line; but its own acquired momentum(7) is expended in the effort, and by the time it has reached its original place in the line, its inertia is destroyed, and it rests there without a tendency to go beyond it on the other side. Meanwhile, however, D and E have attained their greatest ele-

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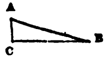
(5.) When a string is stretched, it has always a tendency to resume its position. This is the *force of tension;* when this force is entirely overcome, the cord breaks.

(6.) Take any triangle  and suppose that three strings are applied at A, one along AB, another along CA continued beyond A, and the third parallel to BC, all three strings being tied to A; and suppose weights are attached to the strings, which weights bear the same proportion to one another as the lines AB, AC, BC, respectively; the point A, to which the strings are tied, will remain at rest. This shows that one of the forces exactly counteracts the other two; hence we should produce the same effect in any case, whether we used one of these forces, or the other two, *in opposite directions*. In the latter case, the force is said to be *resolved* into the two other forces, *in directions precisely opposed to their original directions*. Thus, a force, proportional to AB, and in that direction, may be resolved into two, proportional to AC, CB, and in those directions. If AC be perpendicular to CB, we have the case in the text. For if (in fig. 2, No. 1) we suppose BE, BD, to be proportional to the tensions, BE will be equivalent to B*b*, *b*E, and BD to B*b*, *b*D; of which *b*E and *b*D are equal and opposite, and, therefore, counteract each other.

(7.) The force with which any body, when placed in motion, acts upon any other body with which it comes in contact, must necessarily depend upon the speed with which the first body moves, and the number of particles of matter it contains. In order to estimate the latter, we must compare a cubic inch with a cubic inch of a standard body, as distilled water at a temperature of 62° Fahrenheit; we thus find the *density* (see below, note 8). If we multiply the number of cubic inches in a body by the number expressing its density, the result is a number expressing the quantity vation, and thus the protuberance, DBE, is resolved into two, D′DB and BEE′, (of less height, however) on either side (No. 3.) In like manner, the particles D and E, in returning to their places, drag up the next adjoining, D′ and E′, and then the next, and so on; and thus the summits of the protuberances advance along the line, and correspond in succession to all its points; and the visible effect is an undulation, or wave, which runs along the cord with a velocity greater the greater is the force with which the cord is strained, as it manifestly ought to be, since the rapidity with which each molecule returns from its displaced situation, is greater as the force urging it is so; and this force is nothing more than the resolved part of the tension.

" In like manner, when a wave is excited in the surface of water, as when, by throwing in a stone, one portion is violently driven down, and the surrounding part heaped up above its natural level, this subsides and fills up the vacuity; but as its pressure takes place alike on both sides of the ridge, the fluid on the outside of the ridge is also pressed on, from below upwards, by the reaction of the fluid stratum which sustains the ridge, and whose pressure is propagated equally in all directions. Thus the ridge, in subsiding, not only fills up the central vacancy, but forces up another ridge exterior to it; and this, in subsiding, another, and so on; and thus an advancing wave is formed; and, the same action taking place on all sides of the centre, the wave can advance no otherwise than in the direction of radii on all sides diverging therefrom.

" It is by no means intended, in what is here said, to give an accurate account of what passes in either of these cases, (in fact, it is very far from being so, as the reader, by a little attention, will soon perceive,) but only to give a first conception of the propagation of motion by undulations, or waves.

" In this general account of the above cases, one thing, however, cannot fail to strike the reader, that the *wave* which advances on the surface of the water—the sinuosity which runs along the stretched cord—are neither of them things, but *forms*. They are not moving masses, advancing in the direction in which they appear to run, but outlines, or figures, which, at each instant of time, include all the particles of the water, or the cord, which, it is true, *are* moving, but whose motion is, in fact,

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of matter; and if we multiply this by the number representing the *velocity* (note 10), the result is called the *momentum*, and is the natural measure of the effect of one body in motion impingeing upon another. If we only wish to estimate the momentum of one body as compared with that of another, we may use their weights expressed in pounds, instead of their quantities of matter, the latter being proportional to the former.

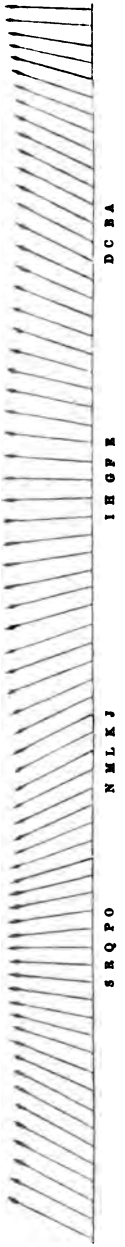

Fig. 3.

transverse to the direction in which the wave advances. But this is, by no means, an essential condition. We may generalize this idea of a *wave*, and conceive it as the form, space, or outline, whether linear, or superficial, comprehending all the particles of an undulating body which are at once in motion; supposing, for the present, that the motion of each consists of a simple displacement and return to quiescence, and not in a repetition of several such displacements and returns in succession.

"The waves in a field of standing corn, as a gust of wind passes over it, afford a familiar example of the relation between the motion of the wave and that of the particles of the waving body comprised within its limits, and of the mutual independence which may, in certain cases, subsist between these two motions. The gust, in its progress, depresses each ear in its own direction, which, so soon as the pressure is removed, not only returns, by its elasticity, to its original upright situation, but, by the impetus it has thus acquired, surpasses it, and bends over as much, or nearly as much, on the other side; and so on alternately, oscillating backwards and forwards in equal times, but continually through less and less spaces, till it is reduced to rest by the resistance of the air. Such is the motion of each individual ear; and as the wind passes over all of them in succession, and bends each equally, all their motions are so far similar. But they differ in this, that they commence not at once, but successively. Suppose (to fix our ideas) the wind runs over 100 feet in a second, and that the ears stand one foot asunder, and each makes one complete vibration to and fro in a second; suppose A (fig. 3) to be the furthest point which the wind at any given instant of time has reached, or the last ear which it has just bent, and let the action of the wind be regarded as lasting only for a single instant; then will the next preceding ear, B, have already begun to rise from its bent position; the next, C, will have risen rather more; and the 25th ear, G, (since the distance, AF, is 25 feet, and, consequently, since $\frac{25}{100}=\frac{1}{4}$ of a second, have elapsed since the wind was at G) will have gone through one-fourth of its complete vibration to and fro, and will have, therefore, just attained its upright position; so that the ears, F, E, immediately adjacent towards A, will not yet have quite recovered their perpendicularity, but still lean somewhat forwards; while those on the other side H, I, will have surpassed the perpendicular, and have begun to sway backwards; consequently, at G, the stalks will, on both sides, be convex towards G, and the ears in that place will be farther asunder than in their state of rest, and will appear, as it were, *rarefied*,(8) by a spectator so distant as to take in a great extent at once. Still further in rear of the wind as 50 feet, at L, the 50th ear will have swung backwards as far as possible, and will just have its motion destroyed. The preceding stalk, K, will still want somewhat of its extreme backward flexure; the subsequent one, M, will already have risen a little, and, therefore, the interval of the ears, K, N, will be just what it was in the state of rest. At L, then, the spectator will see the ear at natural distances from each other. Again, the 75th stalk, Q, in rear of the wind, will have had time to rise again erect from its *backward* inclination, 3-4ths of a second having elapsed since its first bending forward. The 74th, P, will not be quite erected; the 76th, R, will have surpassed the erect state, and have again begun to lean forward. The states, then, on both sides of Q, will curve *towards* Q, and their ears will, therefore, be closer together than in their natural state, and will appear *condensed* to the spectator, above mentioned. Finally, the 99th, 100th, and 101st ears will be again in the same relative state as the 49th, 50th, and 51st, only leaning forwards, instead of backwards, and, therefore, neither condensed nor rarefied. The field, then, will present to the spectator a series of alternate condensations and rarefactions of the corn ears, sepa-

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(8.) Each kind of matter contains, in a given space, say a cubic inch, a certain number of particles. If we take the number of particles of matter in a cubic inch of distilled water, at the temperature of 62° Fahrenheit, as a standard, then the *density* of any body will be the number resulting from dividing the number of particles it contains in a cubic inch by the standard number; and, as it may be proved that we shall obtain the same result by dividing the number of pounds which a cubic inch of the body weighs, by the number of pounds which this cubic inch of water weighs, we have a convenient practical method of finding the *density*. [When the barometer shews 30 inches, a cubic inch of distilled water, at the temperature 62° Fahr., weighs 252·458 grains, and, therefore, the cubic foot weighs 62·321066 pounds avoirdupois. The number expressing the *density* of any body is the same as that expressing its *specific gravity*, and may, therefore, be found in tables of specific gravities.] If the resulting quotient is very small, the body is said to be *rare;* if large, *dense.* If, by any mechanical means, we are able to *diminish the density*, as by extracting some air from the receiver of an air-pump, or by expanding air by heat so that the same number of particles occupy a larger space, the body is said to be *rarefied;* and if we can *increase the density*, as by forcing more air into a space already filled with air by a *condensing machine*, or by cooling air, we are said to *condense* it. Steam is rarefied water; water is condensed steam.

rated, by intervals, in their natural states of density; and this series will extend so far in rear of the wind, till the resistance of the air and want of perfect elasticity in the stalks shall have reduced them to rest; and these alternations, by the difference of shading they offer, will become apparent to his sight as dark and bright zones.

"It matters not, for our present purpose, that the impulse is, in the case here taken, not propagated mechanically from ear to ear by mutual impulse, but that each moves independently of all the rest. All we want to illustrate is the difference between the *wave* and the *moving matter*, and the independence of their motions. The waves here run along with the speed of the wind, whatever that may be; for it is always the point 25 feet in rear of the wind that is most rarefied, and that at 75 that is most condensed; and the interval between the 1st and 100th ear, comprehending ears in every state or *phase*(9) of their vibrations, is what we term a wave. The *velocity*(10) of the wave then, is, in this case, that of the wind; and is totally distinct from and independent of, that of each or any particular ear. The one is a constant, the other a variable quantity; the one a general resulting phenomenon, the other, a particular, individual, mechanical process, going on according to its own laws.

"Neither is it of the least consequence whether the excursions of the several stalks from their position of rest be great or little; whether the degree of bending or force of the wind, be great or small, provided its velocity be constant. In the case of wind, indeed, the force depends on the velocity; but if we conceive the impulse given by a rigid rod made to sweep across the field, any greater or less degree of flexure of the wave would still be that of the rod in every case.

"But with respect to the *breadth*(11) of the wave, or the magnitude of

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(9.) From *φάσις* (fesis, or fasis in Modern Greek) *an appearance* or *phenomenon*, (which latter word is the neuter participle *φαινόμενον*—fāinom·inon, or fenom·enon in M. G.—of the verb *φαίνομαι*—fāi·nomāi, or fe·nome in M. G.—*I appear.*) *Phase* is used to designate the appearance presented at any one moment by something whose appearance varies. Thus we commonly speak of the *phases* of the *moon*, as when it is horned, gibbous, half or full. *Phenomenon* is used more generally for *any* appearance, or anything which appears. See Note 23.

(10.) *Velocity* is *rate of motion.* If the motion be *uniform*, we may measure the velocity by the number of feet passed over in one second of time; if the motion *vary*, then the velocity at any instant must be measured by the number of feet which *would* be passed over in a second of time *if* the rate of motion *at that instant* were to remain uniform during one whole second. The word *velocity* is frequently used for its *measure* in treatises on Mechanics.

(11.) Termed also the *length* of the wave by other authors, and, apparently, more justly so.

that interval which comprises particles in every *phase* or state of their motion, going and returning, it is otherwise. This is a result depending essentially on the motions of the particles themselves; for we see, evidently, in the above instance, that this breadth, which is 100 feet, is equal to the space run over by the wind in a time equal to that of one complete vibration, going and returning, of each individual ear. Now this time depends only on the elasticity of the stalk, and the weight of the ear it carries. In general, then, we may state, that 'The breadth of a wave is equal to the space run over by it in a time equal to that in which any molecule(12) of the waving body performs one complete vibration, going and returning, through all the phases of its motion.' In the case here taken, the motion of the individual molecule, is not, as in the former instances, transverse to that of the wave, but parallel to it.(13) It is then hardly to be termed a *form*, or an *outline*. To such a wave the term *pulse* is often applied. Whatever be the nature of the internal motions, however, the general name 'wave' or 'undulation', will equally apply, and will be used in future indiscriminately for all sorts of propagated impulses. It is not even necessary that the motions of the constituent particles should be rectilinear, or even lie in one plane. We may suppose the impelling cause to be a whirlwind. In this case, each ear will have a rotatory or twirling motion, or the stalk a conical one, simply, or in addition to its flexure in a vertical plane; but the wave is independent of these particularities..

"In the case just described, each particle is supposed to be set in motion by an external cause, and to be uninfluenced in its motions by the rest. It is, therefore, not(14) a case of the *propagation* of motion at all. It is quite otherwise with sound, or other similar cases, where every particle of a medium receives its whole motion from those which were moving before, and transmits it to others previously at rest. The problem to investigate the general laws of the communication of motion under such circumstances is one of the utmost complexity, and, at present, has been only resolved under very restricted conditions."

Sir John Herschell then proceeds to the mathematical investigation of one of the simplest cases, into which we cannot enter. It may be sufficient to state generally that if the particles of the air were *visible*, the atmos-

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(12.) Or particle; pronounced "mo·likiul."

(13.) This is also the case in atmospheric or sonorous waves, and as it is most difficult to conceive, we have thought it best to introduce the lengthy explanation in the text as being the clearest we have ever met with.

(14.) As in the two first cases.

pheric wave would bear a great resemblance to the yellow wave of the ears of corn, consisting of alternate condensations and rarefactions.

We are now able to understand, generally, *what* it really is that passes from one point to another, when we say that *sound is transmitted.* The sensation itself is, of course, incapable of being transmitted ;(15) nor is any absolute *thing* transmitted, but a certain *state* of the particles of the atmosphere *is* transmitted, and this state is the *approximate cause* of the sensation. The sensation, indeed, is never experienced, unless there be an intelligent brain to receive it. We may picture to ourselves any great convulsion of nature as being accompanied by the roll of thunder or the howl of tempests ; all of which would be true enough, perhaps, were *we* or any other being endowed with a sentient brain, there to hear ; but, how much grander is the idea of the awful *silence* with which the God of nature works, the noiseless exercise of infinite power ! Whoever has contemplated the calm, quiet, and yet irresistible action of the steam-engine may partly realise this idea.

We say, however, that sound "passes," "travels," "is reflected," and so on, as if sound were really something external, and not internal, objective, and not subjective ; and these expressions have become so much a part of our language that it is impossible (were it even desirable) to have them amended. We must, therefore, endeavour to understand them ; that is, to know what is the real phenomenon which they are meant to designate. If, then, there be two persons, A and B, standing at a distance of 1090 feet, and an impulse be given to the air, at some point beyond A, but in the same straight line with A and B, the undulation will reach A one second of time before B experiences a similar sensation. Now, at the time that the expressions to which we have alluded, were coined, it was not known that sound was not something which might be transmitted through a space perfectly void, instead of being dependent for its existence upon the conveyance of a certain state of the particles of the atmosphere. " Shortly after the invention of the air-pump, it was found that the collision of hard bodies in an exhausted receiver produced no appreciable sound. Hauksbee(16) having suspended a bell in the receiver of an air-pump, found the sound die away by degrees, as the air was exhausted, and again increase on its readmission ; and when made to sound in a vessel full of air, the sound was not transmitted through the interval between that and an

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(15.) Yet, in common language, it is not unusual to talk of a "sensation of fear or joy spreading over a multitude." Such phrases are purely *poetical,* and we must guard our *reason* against them.

(16.) " Philosophical Transactions, 1705."

exterior vessel from which the air had been extracted, although it passed freely when [the air was] readmitted. On the other hand, when the air was condensed in a receiver, the sound of a suspended bell was stronger than in natural air, and its intensity increased with the degree of condensation. Roebuck,(17) when shut up in a cavity excavated in a rock, which served as a reservoir of air for an iron foundry in Devonshire, to equalize the blast of the bellows, observed the intensity of sound to be considerably augmented in the air thus compressed by their action. The same effect has been experienced in diving-bells. More recently, M. Biot(18) has repeated the experiment of the exhausted receiver, with a much more perfect vacuum than could be procured in Hauksbee's time, and found the sound to be quite imperceptible, even when the ear was held close to the receiver, and all attention paid."(19)

Sound, then, was considered as *something* which passed from place to place, with a velocity of 1090 feet in a second of time;(20) even capable of existing in a perfectly void space,(21) and certainly not requiring the presence of a living brain for its appreciation. And there are, doubtless, many persons who still regard it in this light. It is, however, essential that a correct notion should be formed of the real nature of the case, which will be found very pregnant with results, especially in respect to speech, serving to give us a clue to the peculiarities of individual pronunciations.

(17.) "Transactions of the Royal Society, Edinburgh, vol. v., p. 34."

(18.) "Mém. d'Arcueil vol. ii., p. 97."

(19.) Herschell. SOUND, par. 2.

(20.) "Sound in dry air and at the freezing temperature travels at the rate of 1090 feet, or 363 yards per second, and—on the supposition that every additional degree of atmospheric temperature on Fahrenheit's scale adds 1·14 feet to the velocity at 62° Fahrenheit (which is the standard temperature of the British metrical system), it runs over 9000 feet in eight seconds, 12¾ British standard miles in a minute, or 765 miles in an hour, which is about three-fourths of the diurnal velocity of the earth's equator. Hence, in latitude 42½° (42° 29′ 40″) if a gun be fired at the moment a star passes the meridian of any station, the sound will reach any other station exactly west of it at the precise instant of the same star's arriving on *its* meridian." Herschell, ib., par. 17, 18.

(21.) As the music of the spheres:

"Look how the floor of heaven
Is thick inlaid with patines of bright gold;
There's not the smallest orb, which thou behold'st,
But in his motion like an angel sings,
Still quiring to the young-eyed cherubims;
Such harmony is in immortal souls;
But, while this muddy vesture of decay
Doth grossly close it in, we cannot hear it."

Merchant of Venice, 5, 1.

And, as the idea, although easily seized by the philosopher and acknowledged as an established principle, is too strict to have passed into common language, we feel it advisable to illustrate it by an example. The *rainbow* is a well known phenomenon. How many persons gaze upwards at the same time into the heavens and imagine that they see *a* rainbow, each supposing that he sees the same as his neighbour; whereas, not only is the rainbow different for each individual, but it does not even remain the same for any appreciable period of time for the same individual; each person experiences a certain visual sensation which, while ever varying, is constantly replaced by one so similar that he marks not the difference, and which is sufficiently alike in different individuals for them to designate it by the same word. But the sensations of different individuals are by no means *precisely* similar, as we should find by a slight inquiry, and as is evident if we take into consideration the various degrees of perfection and imperfection of vision, either for the appreciation of form or color.

In common language, then, the word *sound*, which properly expresses the sensation, may be used for the approximate cause of the sensation, namely, the undulation of the atmosphere. This is in accordance with other expressions in common use; thus, we say that "a rose smells," and "we smell a rose;" that "she looks well," and "we look well at her," &c. We are thus able to employ the phrases "sound travels," &c., and may say that it is generated or first produced at the point where the impulse is first given to the air, because, if an ear were situated at that point it *would hear the sound* (that is, the brain of the person to whom the ear belonged, would experience the sensation called sound) at the moment the impulse was given.

"Every impulse mechanically communicated to the air, or other sonorous medium, is propagated onward by its elasticity(22) as a wave or pulse; but in order that it should affect the ear as an audible sound, a certain force and suddenness is necessary. Thus, the slow waving of the hand through the air is noiseless, but the sudden displacement and collapse of a portion of that medium by the lash of a whip produces the effect of an explosion. It is evident that the impression conveyed to the ear will de-

(22.) The *elasticity* of a body is the force by which it tends to recover its original form, when that form is altered; the bent bow tries to straighten itself; the stretched caoutchouc to collapse; compressed air to expand. In order to possess elasticity it is necessary that the particles of a body should be separable, so that the distances between them admit of being increased or diminished. In the case of air (and other gases), the particles are at a distance, and mutually *repel* each other; hence the resistance they offer to compression. The elasticity of atmospheric air is familiarly shown in an inflated bladder.

pend entirely on the nature and law of the original impulse, which being completely arbitrary, both in duration, violence, and character, will account for all the variety we observe in the continuance, loudness, and quality of sounds. The auditory nerves, by a delicacy of mechanism, of which we can form no conception, appear capable of analysing every pulsation of the air, and appreciating immediately the law of motion of the particles in contact with the ear. Hence all the qualities we distinguish in sounds— grave or acute, smooth, harsh, mellow, and all the nameless and fleeting peculiarities which constitute the differences between the tones of different musical instruments, bells, flutes, cords, &c., and between the voices of different individuals or different animals.

" Every irregular impulse communicated to the air produces what we call a *noise*, in contradistinction to a musical sound. If the impulse be short and single, we hear a crack, bounce, or explosion; yet it is worthy of remark, as a proof of the extreme sensibility of the ear, that the most short and sudden noise has its peculiar character. The crack of a whip, the blow of a hammer on a stone, and the report of a pistol, are perfectly distinguishable from each other. If the impulse be of sensible duration and very irregular we hear a crash; if long and interrupted, a rattle or a rumble, according as its parts are more or less continuous; and so for other varieties of noise.

" The ear, like the eye, retains for a moment of time, after the impulse on it has ceased, a perception of excitement. In consequence, if a sudden and short impulse be repeated beyond a certain degree of quickness, the ear loses the intervals of silence and the sound appears continuous. The frequency of repetition necessary for the production of a continued sound from single impulses, is, probably, not less than sixteen times in a second, though the limit would appear to differ in different ears.

" If a succession of impulses occur, at exactly equal intervals of time, and if all the impulses be exactly similar in duration, intensity, and law, the sound produced is perfectly uniform and sustained, and has that peculiar and pleasing character to which we apply the term musical. In musical sounds there are three principal points of distinction, the pitch, the intensity, and the quality. Of these, the intensity depends on the violence of the impulses, the quality on their greater or less abruptness, or, generally, on the law which regulates the excursions of the molecules of air originally set in motion. The pitch is determined solely by the frequency of repetition of the impulse, so that all sounds, whatever be their loudness or quality, in which the elementary impulses occur with the same frequency, are at once pronounced by the ear to have *the same pitch*, or to be in *unison*. It is the pitch only of musical sounds whose theory is susceptible of exact reasoning, and on this the whole doctrine of harmonics is founded. Of their qualities and the molecular agitations on which they depend, we know too little to subject them to any theoretical discussion.

"The means by which a series of equidistant impulses, or, to speak more generally, by which an initial impulse of a periodical nature—can be produced mechanically, are extremely various. Thus if a toothed wheel be turned round with uniform velocity, and a steel spring be made to bear against its circumference with a constant pressure, each tooth, as it passes, will receive an equal blow from the spring, and the number of such blows per second will be known, if the velocity of rotation and the number of teeth in the wheel be known.

"The late Professor Robson devised an instrument in which a current of air passing through a pipe was alternately intercepted and permitted to pass by the opening and shutting of a valve or stopcock. When this was performed with sufficient frequency (which could only be done, we presume, by giving a rapid rotatory motion to the stopcock by wheelwork,) a musical tone was produced, whose pitch became more acute as the alternations became more frequent. This is precisely the principle of the Sirene of Baron Cagniard de la Tour.(23) In this elegant instrument the wind of a bellows is emitted through a small aperture, before which revolves a circular disc, pierced with a certain number of holes arranged in a circle concentric with the axis of rotation, exactly equidistant from each other, and of the same size, &c. The orifice, through which the air passes, is so situated, that each of these holes, during the rotation of the disc, shall pass over it and let through the air, but the disc is made to revolve so near the orifice, that in the intervals between the holes it shall act as a cover and intercept the air. If the holes be pierced obliquely, the action of the current of air alone will set the disc in motion: if perpendicular to the surface, the disc must be moved by wheelwork, by means of which its velocity of rotation is easily regulated and the number of impulses may be exactly counted. The sound produced is clear and sweet, like the human

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(23.) Pronounced, Kanyar də la Tur; the method adopted here, and in other cases, for exhibiting the pronunciation of words cannot be fully explained till Part II. chap. 1, of this work, to which the reader is therefore referred; we have, however, preferred giving the pronunciation where we thought that the mere English reader might experience any difficulty. For Greek words we have always given two pronunciations; first, the one now in use at Eton, and secondly, the one now in use at Athens; we prefer the latter, but the former will generally be found the only pronunciation intelligible to Englishmen; where we only give one pronunciation, an Etonian and Athenian would pronounce alike.

voice. If, instead of a single aperture for transmitting the air, there be several, so disposed in a circle of equal dimension with that in which the holes of the disc are situated, that each shall be opposite to one corresponding hole when at rest, these will all form sounds of one *pitch*, and being heard together will reinforce each other. The Sirene sounds equally when plunged in water and fed by a current of that fluid as in air; thus proving that it is the number of impulses alone, and nothing depending on the nature of the medium in which the sound is excited, that influences our appreciation of its pitch.

" In general, whatever cause produces a succession of equidistant impulses on the ear, causes the sensation of a musical sound, whether such periodicity be a consequence of periodical motions in the origin of the sound, or of the mode in which a single impulse is multiplied in its conveyance to the ear. For example, a series of broad palisades set edgeways in a line directed from the ear, and equidistant from each other, will reflect the sound of a blow struck at the end of the line nearest the auditor, producing a succession of echoes, which (by reason of the equidistance of the palisades) reach his ear at equal intervals of time $(=2\times\frac{\text{distance of palisades}}{\text{velocity of sound}})$ (24) and will, therefore, produce the effect of a number of single impulses originating in one point. Thus a musical note will be produced whose pitch corresponds to a number of vibrations per second, equal to the quotient of the velocity of sound by twice the distance of the palisades.

" A similar account may be given of the singing sound of a bullet, or other missile, traversing the air with great rapidity. The bullet, being in a state of rapid rotation, and not exactly alike in all its parts, presents, periodically, at equal intervals of space and time, some protuberance or roughness, first to one side, then to the other. Thus, an interruption to the uniformity of its mode of cutting through the air is periodically produced, and reaches the air in longer or shorter equal intervals of time, according as the rectilinear velocity of the bullet bears a greater or less ratio to the velocity of its rotation about its axis.

" The echoes in a narrow passage, or apartment, of regular figure, being regularly repeated at equal very small intervals, always impress the ear with a musical note; and this is, no doubt, one of the means which blind

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(24.) Thus, suppose the palisades to be two feet apart, and the velocity of sound 1090 feet in a second, the interval of time will be $2 \times \frac{2}{1090}$ or $\frac{4}{1090}$ or $\frac{2}{545}$ of a second. There will, therefore, be about 272 impulses in a second, and the note will be rather sharper than the middle C on a piano-forte, or C on the first leger line below for the treble clef, which answers to 256 vibrations in a second.

persons have of judging of the size and shape of any room they happen to be in. But the most ordinary ways in which musical sounds are excited and maintained, consist in setting in *vibration* elastic bodies, whether flexible, as stretched strings or membranes, or rigid, as steel springs, bells, glasses, &c., or columns of air of determinate length inclosed in pipes. All such vibrations consist, in a regular alternate motion, to and fro, of the particles of the vibrating body, and are performed in strictly equal portions of time. They are, therefore, adapted to produce musical sounds by communicating that regularly periodic initial impulse to the aërial molecules in contact with them which such sounds require."(25)

Classifying the instruments according to the means of producing the vibration, we have, from the stretched string, the violin and its varieties, the guitar, harp and its varieties, piano-forte and its varieties; from the membrane, the drum, tambourine, &c.; from springs, the harmonica and its varieties (seraphine, accordion, concertina, &c.); from solid metal, bells, cymbals, triangle, &c.; from glass, musical glasses, &c.; from columns of air, flute, trumpet, horn, bassoon, trombone, serpent, ophicleide, organ pipe, flageolet, clarionet, &c. "The most usual means of exciting the vibrations of a column of air in a pipe is by blowing into, or rather over it, either at its open end, or at an orifice made for the purpose at the side, or by introducing a small current of air into it, through an aperture of a peculiar construction, called a *reed*, provided with a "tongue," or flexible elastic plate, which nearly stops the aperture, and which is alternately forced away by the current of air, and returns by its elasticity, thus producing a continual and regularly periodic series of interruptions to the uniformity of the stream, and, of course, a sound in the pipe corresponding to their frequency. Except, however, the reed be so constructed as to be capable of vibrating in unison, or nearly so, with, at least, one of the modes of vibration of the column of air in the pipe, the sound of the reed only will be heard, the resonance of the pipe will not be called into play, and the pipe will not *speak;* or will speak but feebly and imperfectly, and yield a false tone."(26)

In all these cases, the modes of producing vibrations are the device of man; we must now turn to the contemplation of the most perfect and beautiful of instruments, the organ of the voice. Its construction is difficult to appreciate, but the preceding observations are sufficient to teach us to admire even where we cannot comprehend it. It is only by thus comparing the results of man's ingenuity with the works of nature, which

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(25.) Herschell, ib., par. 138—146.

(26.) Herschell, ib., par. 187.

seem to have existed in their present perfection from the beginning, that we can properly realise both the greatness and littleness of man's intellect; its greatness in what it has achieved, its littleness in the immeasurable distance between *its* works and its Creator's.

The following is Sir John Herschell's condensed account of the organ of the voice.

" Almost every animal has a voice or cry peculiar to itself, originating in an apparatus destined for that purpose, of more or less complexity. The voice is most perfect and varied in man and in birds, which, however, differ extremely in the degree in which they possess this important gift. In quadrupeds, it is limited to a few uncouth screams, bellowings, and other noises, perfectly unmusical in their character, while in many birds it assumes the form of musical notes of great richness and power, or even of articulate speech. In the human species alone, and that only in some rare instances, we find the power of imitating with the voice every imaginable kind of noise, with a perfect resemblance, and of uttering musical tones of a sweetness and delicacy attainable by no instrument. But in all, without exception, (unless, perhaps, the chirp of the grasshopper, or cricket, be one,) the sounds of the voice are produced by a *wind instrument*, by the column of air contained in the mouth, throat, and anterior part of the windpipe, set in vibration by the issue of a stream of air from the lungs through a membranous slit in a kind of valve placed in the throat. In man and in quadrupeds, this organ is single, but in birds, as M. Savart (27) has shewn, it is double, a valve of the kind above mentioned being placed at the opening of each of the two great branches into which the trachea first divides itself as it enters the lungs, just before they unite into one common windpipe.

" The organs of the voice, in man, consist of

" 1. The Thorax, (28) which, by the aid of the diaphragm (29) and the twenty-four intercostal (30) muscles acting on the lungs within, and alternately compressing and dilating them, performs the office of a bellows.

" 2. The trachea,(31) a cartilaginous(32) and elastic pipe which termi-

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(27.) Pronounced " Savar."

(28.) " Thoraks," the chest, a Greek word.

(29.) " Dai·ɐfram," the midrif, a Greek term ; " dhia·fraGma," in Modern Greek.

(30.) Intercostal ; *inter*, between, *costas*, the ribs.

(31.) " Tre·kiɐ," or " trak·iɐ," *the windpipe*, from the Greek τϱαχεῖα (trăkaiɐ, or trakhia in M. G.) *rough ;* on account of its roughness.

(32.) " Kartilaj·inɐs," partaking of the nature of cartilage (" kar·tilij") or *gristle*.

nates in the lungs by an infinity of roots or bronchiæ,(33) and whose upper extremity is formed into a species of head called the larynx,(34) situated in the throat, and composed of five elastic cartilages, of which the uppermost is called the epiglottis,(35) whose office it is to open and shut, like a valve, the aperture of the exterior glottis, and which constitutes the orifice of the larynx.

"3. The epiglottis, where it adheres to the larynx, is also united to the tongue, and forms a somewhat concave valve of a parabolic(36) form, whose base is towards the tongue, and which, by its convexity, resists the pressure of the food and liquids as they pass over it in the act of swallowing.

"4. Within the larynx, rather above its middle, between the thyroïd and arytenoïd cartilages,(37) are two elastic ligaments(38) like the parchment of a drum slit in the middle, and forming an aperture making a right angle with the exterior glottis, and which is called the interior or true glottis. This slit in adults is about four-fifths of an inch long, and a twelfth of an inch broad. This aperture is provided with muscles which enlarge and contract it at pleasure, and otherwise modify the form of the larynx.

"5. The tongue, the cavity of the fauces,(39) the lips, teeth, and palate

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(33.) Properly bronchi*a*, from the Greek *βρόγχια* (broɴ·kiɐ, or vroɴ·khia in M. G.) the plural diminutive of *βρόγχος* (broɴkos or vroɴkos in M. G.) the throat. The throat, then, terminates in a vast number of *little throats*.

(34.) "Lărins," the English adaptation of the Greek *λάρυγξ*, which has the same meaning.

(35.) The "ĕpīglŏtis" or "ĕpīglo̱tis" from the Greek, *ἐπὶ* (ĕpi) and *γλῶττις* (glo̱tis, or glottis in M. G.), the upper opening of the larynx situated at the bottom of the tongue *γλῶττα* or *γλῶσσα* (glo̱sɐ or ɢlossa in M. G.)

(36.) "Părɐbŏlik," like a parabola ("părab·olɐ"), the curve which is formed by the passage of any thing projected through the air; as water issuing from a squirt.

(37.) "Thai·roïd" from *θυρεός* (thiu·rios, or thireos· in M. G.), *a shield*, and *εἶδος* (aidos, or idhos in M. G.) *resemblance;* a piece of gristle, so called from its resemblance to a shield. "It is harder and more prominent in men than women, and forms the *pomum Adami*" (pomɐm ad·ɐmai), or Adam's apple. The "ăriti·noïd" cartilage is *funnel shaped*, from *ἀρύταινα* (ăriutāinɐ, or ari·tena in M. G.) *a funnel*, and *εἶδος*.

(38.) "Lig·ɐment" from Latin, *ligamentum*, a band, from *ligo*, to bind. "An elastic and strong membrane, connecting the extremities of moveable bones."—Hooper, *Medical Dictionary*.

(39.) "Fōsīz," Latin for *jaws*.

with its *velum pendulum*,(40) and the uvula,(41) a pendulous, conical, muscular body, which performs the office of a valve between the throat and nostrils, as well as perhaps the cavity of the nostrils themselves, are all concerned in modifying the impulse given to the breath as it issues from the larynx, and producing the various consonants and vowels, according to the different capacities and shapes of their internal cavity.

" In speaking or singing, the glottis, it has been generally supposed, performs the part of a reed. The membranes of which it is composed being kept at a greater or less state of tension by the muscles with which it is provided, and its opening expanded or contracted according to the degree of gravity or acuteness of the sound to be uttered. But the tone thus originally produced by the glottis is sustained and reinforced by the column of air in the larynx, throat, and mouth, whose dimensions and figure are susceptible of great variation by the action of the innumerable muscles which give motion to this complicated and intricate part of our frame. Thus in a general way we may conceive how the voice is produced and modified; but when we would penetrate further into particulars, the difficulties presented by the organs of voice are even greater than those which beset the investigation of those of hearing."(42)

It is not our purpose to enter into the various theories which have been proposed for the solution of the difficulties presented by this interesting question; they would be out of place in a popular work like the present, and the reader who requires a more complete account of the nature of sound is referred to Sir John Herschell's own treatise, from which we have already made such lengthy extracts. Some general account of the nature of sound, and of the action of the human organs of speech, was necessary for the appreciation of the experiments made by Professors Willis and Wheatstone, (which we shall shortly have occasion to specify,) and to such we have confined ourselves.

The general science of sound is called *Acoustics*,(43) and that portion of the science of Acoustics which relates to the voice only, is termed *Pho-*

(40.) "Vīlʚm pen·diulʚm." "The soft palate. The soft part of the palate, which forms two arches affixed laterally to the tongue and pharynx."—Hooper. Pharynx, "fărinŋs," "The muscular bag at the back part of the mouth."—Hooper.

(41.) "Yu·viulʚ." Latin diminutive of *uva*, a grape.

(42.) Herschell. ib. parr. 346—352.

(43.) Or "ăkaustiks," from the Greek ἀκούω (ʚkauo, or akuo in M. G.), *I hear*, whence the adjective ἀκουστικὸς (ʚkau·stikos, or akustikos· in M. G.), *relating to hearing*. This term being entirely subjective (relating to the sensations of the perceiver) is highly appropriate.

netics.(44) Phonetics(45) is therefore a branch of Acoustics, and treats of sounds of a peculiar nature only (namely, *articulate sounds*)(46) produced by a peculiar instrument (the human organ of voice). Professor Willis's experiments tend to shew that the same sounds may be also produced *mechanically*,(47) or, in other words, by a human contrivance, a circumstance greatly tending to give us a clearer idea of their nature.

CHAPTER 2.—ON ARTICULATE SPEECH IN GENERAL.

IT is impossible for us to suppose those whom we address ignorant of reading and writing; but it is at the same time difficult for them to form a just conception of the real nature of spoken language, while they habitually refer it to the conventional symbols by which it is usually indicated —we can hardly say, represented. Let them imagine themselves transported to some part of the world where alphabetical writing is unknown, as to China. Let them listen to what is uttered. What is it they hear? A succession of sounds, each one being an "undivided unit, which cannot properly be said to be *compounded* of several others, as a *written* word is

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(44.) "Fonětiks," from the Greek *φώνη* (foni), *the voice,* whence the adjective *φωνητικὸς* (foni·tikos, or fonitikos· in M. G.), *related to the voice.*

(45.) It is preferable to consider the names of sciences which terminate in *ics* as singular, and not as plural. In French we have *la physique, la mécanique,* &c., in German *die Physik, die Mechanik,* &c., all in the feminine singular, answering to our *physics, mechanics,* &c. In the words *music, arithmetic,* we have also preserved the singular form.

(46.) In Latin, the word *articulus* signifies *a little joint,* or *link.* Sound which is *articulated* consists of a number of small fragments *linked together.* If these fragments are not perceptibly *distinct,* the effect would be one of *continuity,* and the result would be *inarticulate.* This may be illustrated thus: if we play four consecutive notes on one string of a violin, *staccato,* or simply with a separate bow for each, the resulting sounds are *articulate;* they will be less so, if the notes be *slurred* or all played with one bow; but if the finger be allowed to *slide* down the fingerboard from the first to the fourth position, the bow being kept in action, all clearness ceases, i. e., the sound becomes *continuous* and *inarticulate.* *Articulate* is, however, by general consent, confined to *speech:* a man speaks articulately, and one man *more* articulately than another; a beast speaks *inarticulately.* Articulate is hence often synonymous with distinct. Homer calls men *μέροπες* (měr·opes), from *μείρω* (mairo, or miro in M. G.), *I divide,* and ὄψ (ops), *the voice,* because of the *distinct fragments of sound* which they utter in speaking.

(47.) But not by any means so clearly or beautifully as by the human voice.

of letters."(1) Each sound is due to one impulse given to the air by the organs of voice, and the first and most obvious way of representing these sounds would be to have a separate character for each separate sound; that is, a sign which should direct any one who sees it that he is to give the air a similar impulse. The number of these characters would be immense, and some means would have to be devised for reducing it. For this purpose we must reflect upon the manner in which the complicated machine of the human body acts. There is not a single motion in this machine, however simple to outward appearance, which is not really the result of the motion of many parts, the individual motions of each part being wholly imperceptible. We should therefore conclude, that the impulse given to the air is the result of the action of numerous portions of the human machine; that the impulses differ from one another only by the different manner in which these parts come into action, and that we may therefore simplify our representations of these impulses by having characters which shall recall the action of each part separately, (or as nearly so as may be convenient,) and the number of these actions which occur simultaneously.

A little consideration would shew us that there is *one* action which is common to *all* the sounds heard, and which in fact constitutes the very essence of the sound,—it is the production of *voice*, the rude clay as it were, which is subsequently moulded into the various forms of sound afterwards perceived. This voice we may easily discover, in a general way, is the result of some action in the throat, no matter what.(2) ? How then are the different modifications produced. By action of the throat, and of the cavities of the mouth and its various parts, would be the answer which we should almost immediately return. Let us then have characters, we might say, to represent these actions; it will not be necessary to represent the voice itself, because that must be understood throughout.

That such considerations as these originally actuated the framers of alphabets there cannot be much doubt, and if there were, it would be

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(1.) "Das Wort tritt in der lebendigen Sprache ursprünglich als ungetheilte Einheit hervor; es wird nicht eigentlich *zusammengesetzt* aus Lauten, wie etwa das *geschriebene* Wort aus Buchstaben. Erst in der Betrachtung zerlegen wir das Wort in seine Elemente, und nennen diese *Sprachlaute*."—Bekker; *Ausführliche Grammatik*, § 28.

(2.) In the preceding Chapter we have given a short general account of the parts of the human organism, by which the production of voice is effected; but this is of no importance in the present case. We do not now desire to know *how* the original voice is *produced*, but how it is *modified* when produced.

dissipated upon discovering that the oldest known alphabets never use any characters to represent the voice, but only such as represent the action of the parts of the mouth, &c. upon the voice.

There are, however, *three* kinds of action which should be carefully discriminated:

FIRST,—Where the parts of the mouth, &c. *do not touch*, and are not brought very nearly in contact;

SECOND,—Where the parts of the mouth, &c. *are really in contact;*

THIRD,—Where the parts of the mouth, &c. are brought *very nearly* in contact, and a small aperture is left through which the voice is suffered to escape.

Again, there are *two* modes in which each of these kinds of action may take effect:

FIRST,—The voice may be formed simultaneously with the other actions;

SECOND,—A *whisper* (as the sighing of the wind through the trees, or more familiarly, through a pair of bellows, being independent of the action of the larynx) may precede or succeed the formation of the voice.

We have thus learned in a general way how to analyse the spoken sounds which we may chance to hear. Each kind and mode of action gives rise to a class of modifications of the original voice-sound, to which names have been affixed, as follows:—

FIRST KIND,—*Vowels:*
- First mode—*Simple Vowels.*
- Second mode—*Aspirated Vowels.*

SECOND KIND,—*Explosive Consonants*, or Mutes:
- First mode—*Spoken*, or Sonorous, or Loquent, or Compressed, or Vibrated, or Flat, or Thick, or Heavy, or Voice Consonants.
- Second mode—*Whispered*, or Mute, or Susurrant, or Uncompressed, or Simple, or Sharp, or Thin, or Light, or Voiceless Consonants.

THIRD KIND,—*Continuous Consonants*, or Semivocals:
- First mode—*Spoken*, or &c. (as before), Consonants.
- Second mode—*Whispered*, or &c. (as before), Consonants.

These we shall hereafter consider in detail; it is enough for the present that we have learned to separate the compound sounds into several *articulate* sounds,—that is, distinct fragments of sound, forming the *links* of the chains of utterance,—and these articulate sounds into *intonations* and *articulations*, which terms correspond respectively to the words *voice* and *modifications* (which we have adopted), although they are not generally used in so strict a sense as that which we have thought proper to assign to these latter phrases.(3)

We cannot here enter into the question of the origin of speech, or the original meaning of uttered sounds; such discussions belong exclusively to works upon etymology.(4) Our object is to investigate the elements of *spoken* sounds considered as sounds simply, without any reference to the ideas which they are intended to recall. It seems scarcely necessary to mention anything which is so self-evident, were it not that one of the most pertinaciously repeated arguments against the introduction of an alphabetical system which shall truly represent the sounds uttered by the speaker, is derived from etymology only. This argument we shall take occasion to state at length, and attempt to refute, in a subsequent chapter.

Chapter 3.—ON THE VOWELS IN GENERAL.

We shall now consider generally the first kind of action of the parts of the mouth, mentioned in the last chapter, and the first mode; that is the *simple vowels.*

The Phenicians, to whom is ascribed the invention of the alphabet from which those used in Europe have been derived, seem only to have discriminated three cases; the *first,* where the tongue was depressed, and the mouth well opened, (this corresponds to the exclamation *ah!); the second,* where the aperture of the mouth was greatly diminished by the tongue approaching the roof of the mouth while the lips were opened transversely, (this corresponds to the Scotch word *ee* for *eye); and the third,* where the tongue was depressed, as in the first case, and the lips were projected and rounded (this corresponds to the French word *où*, the

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(3.) We speak of an *articulated skeleton,* meaning one in which all the joints have been fastened together by some material which supplies the place of the natural ligament. In the same way the different modifications of which we have spoken serve to connect the otherwise disjointed set of voice sounds, and hence they may be termed *articulations;* while if we regard the articulations only, they are of course incapable of sounding except upon being *intoned* by the voice, whence the term *intonation* is naturally derived.

(4.) From the Greek ἔτυμος (et·iumos, and sometimes nearly etsh·iumos; or et·imos in M. G.), *true;* and λόγος (lŏgos, or loɢos in M. G.), *word.* The word Etymology properly signifies *the science of tracing words to their true roots,* but it is frequently used in a more general sense.

echo of the English *too*). These three positions were accordingly indicated by marks, which in the Hebrew language received the names of *alef, yod, wau.*(5)

Such marks may be executed in a great variety of manners. The two words *character* and *letter*, which we employ in English for those particular marks which represent the elements of speech, have reference to the two most obvious ways of making them, either by *engraving*(6) or by *smearing*(7) some pigment upon any prepared surface.

We shall henceforth employ the word *letter* in the signification of *a mark made to indicate a certain position of the parts of the mouth, necessary for a peculiar modification of the voice;* and by the phrase, *the sound of a letter*, we shall designate the result of this action upon the voice.

The three letters, called in Hebrew, *alef, yod, wau*, indicate the central and two extreme positions in the first mode of the first kind of the action of the parts of the mouth upon the voice, and were all which the inventors of alphabets thought of discriminating. But between these extreme positions lie an infinite number of others, and the subtlety of our organs is such that we are able to glide by almost imperceptible degrees, from one position to another, and to each position will of course correspond a different modification of the voice.

Of the difference of these modifications we can only judge by *contrast.* Hence arise two sources of fallacy; either, the ear becomes confused after hearing one sound repeated after another several times in succession, and loses the power of distinguishing between them; or, it becomes so alive to the effects of contrast that it hears a distinction where the less cultivated ear is not aware of any. Slight differences which occur in speaking,

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(5.) These names are written according to the system in Part II, chap. 1. *Wau* is pronounced *wow.* The use of marks was obvious enough, as the simplest method of recalling sounds and ideas; but inasmuch as it is much more difficult to analyse sounds than it is to conceive thoughts, marks were necessarily used for the expression of ideas (in what is called *idealogical* writing, or *ideagraphy*) long before they were employed as representatives of the elements of sound.

(6.) From the Greek *χαϱάσσω* (kărăso, or kharasso in M. G.), *I engrave*, is derived the substantive *χϰϱακτὴϱ* (kăraktir, or kharaktir· in M. G.), properly *an engraver*, and hence any thing *engraven;* this is our word *character.*

(7.) From the Latin *lino* (laino), *I smear*, comes the substantive *litera* (lit·ere), *a smear*, whence our word letter. Engraving was more obvious than painting, and required less preparation; at the same time it is more durable. It is only when paintings are entirely excluded from the effects of the atmosphere that they can present, after the lapse of centuries, the fresh appearance of the Pompeian and Egyptian frescoes.

although marked enough to form what is termed a peculiar pronunciation, are not considered sufficient to be distinguished by separate names or characters, when occurring in the *same* language; while the *same* slight distinctions are often of great importance in the pronunciation of other languages. Thus we pronounce the italicized vowel in "carr*y*" differently from that in "r*e*al," but we believe them to be both essentially the same, the only difference being that the second is accented and the first unaccented; and any one who should attempt to distinguish these sounds as being essentially different, the unaccented and accented forms of two separate vowels, would most probably be unable to convince an Englishman of the fact, and would therefore only lose his labour. Nevertheless such is undoubtedly the case, and the two sounds are distinguished by different characters (y and i respectively) in Polish, and also (by other forms) in Russian, and, we believe, all other Slavonic languages. It would be unwise to attempt to make a distinction in English, because the distinction is not *felt* and therefore not strictly observed.

¿ What points of the scale ought we then to mark, is a question which may well be raised, and might, we think, be as justly asked of the sounds produced by drawing a violin bow across a string, stopped at different places by the fingers. There are an infinite number of places where the finger may rest, but only a certain number of them are designated by the notes of music. As regards music, it may be said, the distances can be fortunately made the subject of mathematical investigation, and can be therefore accurately fixed, as they correspond to certain fixed numbers of vibrations which the string has to perform in a second of time. But, ¿ how are the numbers of these vibrations themselves fixed. We are here thrown back upon the ultimate resource,—the feeling for the propriety of sound,—an entirely subjective standard, varying with each individual.(8)

(8.) To this it may be objected, that each individual arrives at the same conclusion respecting the proper number of vibrations. This is an error, as may be shewn in two ways. First, those who have not been properly tutored, rarely succeed at first in hitting the divisions of the scale, which depend upon the *proportion* which the numbers of vibrations bear to each other; it is only a few persons who have been so framed as to intuitively strike out those divisions, which by the common consent of the experienced is esteemed the best. Again, even where there is perfect agreement respecting the *relative* number of vibrations, there is a difference respecting the *absolute* number; as may be remarked on a great scale in the differences of the *pitch* in use at the Italian Opera in Paris and in London, and the London Philharmonic Concerts and that established by Prof. Hullah. All, except the last, are purely the result of individual caprice. Again it may be objected, that there is a natural arrangement, due entirely to the relations of a few simple numbers; the extent to which this is true or false can only be determined by accurate calculations, for which the reader is

It is impossible that any person in analysing sounds can do more than analyse his own sensations. In proposing characters for sounds, he proposes characters which represent certain of his sensations, which sensations may never occur in any other individual.(9) ? How then can we hope to render this subjectivity objective.(10) We cannot do it perfectly without the aid of a machine. The most accurate description of the position of the parts of the mouth will not suffice, if only for this reason, that as there are no two persons of precisely the same features or stature, so we may reasonably conclude that no two persons possess organs of voice of precisely the same form and calibre,(11) and of this idea the vast difference in the *quality* of voices, is a corroboration. It is easy to say, "make a string vibrate in air, 512 times in a second, and you will experience the sensation represented by the musical note C, on the third space, treble clef."(12) If we could say, "draw out a pipe to the length of $4\frac{7}{10}$ inches, and vocalize it, you will experience the sound represented by o̱," we should have the same certainty as to spoken sounds. *This is what Prof. Willis has to a certain extent accomplished.*

These remarks will tend to shew the great importance of constructing successful *speaking machines*, raising them far above the grade of simple *curiosities*, and placing them in the rank of *necessaries for human improvement.* At present if we wish to acquire any new sounds, ? what is the process which we have to undergo. We first obtain some person who, *we hope*, is capable of producing them, (a professor of languages,—and how often is our hope deceived !) ; we request him to pronounce the sounds over and over again, trying at the same time to imitate them our-

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referred to Herschell on SOUND, parr. 208—265, "Of musical intervals, of harmony and temperament." We have been induced to dwell on the subjective foundation of music, as well as of the vowel sounds, because, conceiving sound as something extraneous (objective), we are too apt to imagine that the laws which govern it are also entirely objective.

(9.) As, to take an extreme case, sensations of sound in one born deaf.

(10.) The reader must by this time have become familiar with the words *subjective* and *objective*, lately introduced into English from the German philosophical nomenclature. They may be explained thus: all things may be divided into sensations and their causes; the first have reference to the individual or *subject* only, the rest are entirely extraneous and form the *objects* of his sensations. Those things are *subjective* then, which relate to the *me* (ich); and *objective*, which relate to the *not-me* (nichtich), according to Kant's phraseology.

(11.) "Kăliber," properly "Kalībr," French, for the "bore of a cannon;" and hence "capacity of mind," &c. Mr. Smart says, that it is accented "Kal·iber" in the first, and "Kăliber" in the second signification.

(12.) This is the test by which the pitch of Professor Hullah's tuning forks is determined.

selves, and submitting the sound produced to his judgment. If this person were *sure* of producing the required sound each time, with unerring accuracy, nothing better could be desired, but we shall hardly find any one who can pronounce any single word twenty times in succession *with perfect identity of tone and manner*, so that a foreigner (persons unaccustomed to the sound are the only fair judges,) would feel *sure* that he had the same standard to imitate. Great practise may enable the speaker to pronounce a word in precisely the same manner, each time that he employs it, but it is a feat which not one in a thousand can execute. We speak feelingly upon this point owing to the numerous disappointments we have ourselves experienced, and the great difficulty we have encountered in obtaining masters who either *would* or *could* discriminate sounds with sufficient accuracy for our purpose. Here then we see the necessity for a speaking machine, of a character, indeed, greatly superior to anything which has as yet been constructed, and we cannot but express an earnest hope that those whose accurate and well tutored organs of hearing and mechanical genius qualify them for the task, will not neglect it. Enough has been done to prove its *practicability*, let us hope that the present century will see it *executed.*

We shall now proceed to give an account of the experiments of Professors Willis and Wheatstone, premising the following definitions. The sound heard when the voice is modified by the first mode of the first kind of action of the voice is termed a *vowel;* the *letter* which recalls this peculiar modification is the *vowel sign.* By the phrase "*the vowel a,*" we mean *the vowel represented by a;* by the "*vowel sign a,*" we mean the letter or sign *a* itself.

"The vowels," says Prof. Wheatstone,(13) "are formed by the voice, modified, but not interrupted, by the various positions of the tongue and lips. Their differences depend on the proportions between the aperture of the lips and the internal cavity of the mouth, which is altered by the different elevations of the tongue." This definition accurately accords with that which we have given.

The following extract contains so much of Prof. Willis's paper(14) as bears upon this subject. We have given it at great length because the original paper being published in a set of philosophical transactions is not easily procured by those who may feel an interest in the subject.

(13.) London and Westminster Review, Oct. 1837, p. 31.

(14.) *On the Vowel Sounds, and on Reed Organ-Pipes,* read 24th Nov. 1828, and 16th March, 1829, before the Cambridge Philosophical Society (in whose presence all the experiments were performed,) and printed in their transactions; vol. 3, paper 10.

"The generality of writers who have treated on the vowel sounds, appear never to have looked beyond the vocal organs for their origin. Apparently assuming the actual forms of these organs to be essential to their production, they have contented themselves with describing with minute precision the relative positions of the tongue, palate, and teeth, peculiar to each vowel, or with giving accurate measurements of the corresponding separation of the lips, and of the tongue and uvula, considering vowels in fact more in the light of physiological functions of the human body, than as a branch of acoustics.

"Some attempts, it is true, have been made at various times to imitate by mechanical means the sounds of the human voice. Friar Bacon, Albertus Magnus, and others, are said to have constructed machines of this kind, but they were probably mere deceptions, like some contrivances which may be found in the works of Kircher, and other writers of the same description.(15) The Abbé Mical (according to Rivarol(16)) made two colossal heads which were capable of pronouncing entire sentences, but the artist having destroyed them in a fit of disappointment at not receiving his expected reward from the government, and having left no trace of their construction, we are left completely in the dark, as to the means employed by him to produce the different sounds. He died about the year 1786. The only attempts which have a claim to a scientific character, are those of Kratzenstein and Kempelen;(17) these gentlemen were both occupied about the year 1770, in the mechanical imitation of the voice, and have both in the most candid manner disclosed the means employed by them, and the results of their experiments, the first in a prize essay presented to the Academy of Petersburg in 1780,(18) and the second in a separate treatise.(19)

(15.) "Kircher, *Musurgia*, p. 303. Bp. Wilkins, *Dædalus*, p. 104. Schottus, *Mechanica. Hyd. Pneum.*, p. 240, and *Magia Univ.* II, 155. B. Porta, *Magia Nat.* p. 287. The *Invisible Girl* was a contrivance of this kind; see *Nich. Journ.* 1802, p. 56, 1807, p. 69." The *Invisible Girl* is described and explained in Brewster, *Natural Magic*, pp. 161—164. Kircher is pronounced "Kīrkhər."

(16.) "Rivarol, *Discours sur l'Universalité de la langue Française*. Borgnis, *Traité des Machines Imitatives*, p. 160." Mical, Rivarol=Mikál, Rivarọl, respectively.

(17.) "Kráts·ənshtain·," and "Kemp·ələn."

(18.) "The abstract of this Essay will be found in the *Act. Acad. Petrop.* for 1780, and the whole Essay in the *Journal de Physique*, vol. 21. See also Young's *Nat. Phil.* I, p. 783."

(19.) "*Le Mécanisme de la parole suivi de la description d'une Machine parlante, par M. de Kempelen; Vienne*, 1791. Dr. Darwin must also be reckoned among the mechanical imitators of speech; see Darwin's *Temple of Nature*, 1803, Note XI."

" Kratzenstein's attempts were limited to the production of the vowels *a, e, o, u, i,*(20) by means of a reed of a novel and ingenious construction attached to certain pipes, some of them of most grotesque and complicated figure, for which no reason is offerred, save that experience had shewn these forms to be the best adapted to the production of the sounds in question.

" Kempelen's treatise abounds with original and happy illustrations, and the author is no less remarkable for his ingenuity and success, than for the very lively and amusing way in which he has treated his subject. None of these writers, however, have succeeded in deducing any general principles.

" Kempelen's mistake, like that of every other writer on this subject, appears to lie in the tacit assumption, that every illustration is to be sought for in the form and action of the organs of speech themselves,(21) which, however paradoxical the assertion may appear, can never, I contend, lead to any accurate knowledge of the subject. It is admitted by these writers,(22) that the mouth and its apparatus was constructed for other purposes besides the production of vowels, which appear to be merely an incidental use of it, every part of its structure being adapted to further the first great want of the creature, his nourishment. Besides, the vowels are mere affections of sound, which are not at all beyond the reach of human imitation in many ways, and not inseparably connected with the human organs, although they are most perfectly produced by them: just so, musical notes are formed in the larynx in the highest possible purity and perfection, and our best musical instruments offer mere humble imitations of them; but whoever dreamed of seeking from the larynx an explanation of the laws by which musical notes are governed. These considerations soon induced me, upon entering on this investigation, to lay down a different plan of operations; namely, neglecting entirely

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(20.) "I use these letters throughout with the continental pronunciation." By this, Professor Willis means that these vowels represent the sounds expressed by the italic letters in "ps*a*lm, th*e*re, b*o*ne, r*u*le, p*i*que," respectively.

(21.) " Kempelen's definition of a vowel, for instance, is deduced entirely from the organs of speech, 'Une voyelle est donc un son de la voix qui est conduit par la langue aux lièvres, qui le laissent sortir par leur ouverture. La différence d'une voyelle à l'autre n'est produite que par le passage plus ou moins large que la langue ou les lièvres, ou bien ces deux parties ensemble accordent à la voix.' § 106." ['A vowel, then, is merely the sound of the voice, that is conducted by the tongue to the lips, which allow it to escape at their opening. The difference between the vowels is merely produced by the narrowing or widening of the passage left for the voice by the tongue or lips, or both.']

(22.) " Kempelen, § 98."

the organs of speech, to determine, if possible, by experiments upon the usual acoustic instruments, what forms of cavities or other conditions, are essential to the production of these sounds, after which, by comparing these with the various positions of the human organs, it might be possible, not only to deduce the explanation and reason of their various positions, but to separate those parts and motions which are destined for the performance of their other functions, from those which are immediately peculiar to speech (if such exist).

"In repeating experiments of this kind, it must also be kept in mind, that the difference between the vowels, depends entirely upon contrast,(23) and that they are therefore best distinguished by quick transitions from one to the other, and by not dwelling for any length of time upon any one of them. A simple trial will convince any person, that even in the human voice, if any given vowel be prolonged by singing, it soon becomes impossible to distinguish what vowel it is.

"Vowels are quite a different affection of sound from both pitch and quality, and must be carefully distinguished from them. By quality, I mean that property of sound by which we know the tone of a violin from that of a flute or of a trumpet. Thus we say, a man has a clear voice, a nasal voice, a thick voice, and yet his vowels are quite distinct from each other. Even a parrot, or Mr. Punch, in speaking, will produce A's and O's and E's, which are quite different in their *quality* from human vowels, and which are nevertheless distinctly A's and O's and E's. Again, as to pitch, all the vowels may be sung upon many notes of the scale, but of this more hereafter. * * * *

(23.) "Kempelen has remarked this with his usual acuteness. Describing one of his early experiments, with a machine" resembling a wine-glass, the handle of which is perforated and provided with a reed, "from which he obtained some of the vowels by covering its mouth with his left hand; he says, 'J'obtins d'abord diverses voyelles, suivant que j'ouvrois plus ou moin la main gauche. Mais cela n'arrivoit que lorsque je faisois rapidement de suite divers mouvemens avec la main et les doigts. Lorsqu'au contraire je conservois pendant quelque tems la même position quelconque de la main, il me paroissoit que je n'entendois qu'un A. Je tirai bientôt de ceci la conséquence, que les sons de la parole ne deviennent bien distincts, que par la proportion qui existe entr'eux, et qu'ils n'obtiennent leur parfaite clarté que dans la liaison des mots entiers et des phrases.' p. 400." ['I began by obtaining several vowels, in proportion as I covered the opening more or less with my left hand. But I could not obtain them except I changed the positions of my hand and fingers in rapid succession. If I retained my hand in any one position for any length of time, I seemed to hear nothing but A. I was not slow in deducing from this, that the sounds of speech are only rendered distinct by the relation existing between them, and do not become perfectly clear, till they are connected into entire words and phrases.']

"It is agreed on all hands that the construction of the organs of speech so far resemble a reed organ-pipe, that the sound is generated by a vibratory apparatus in the larynx, answering to the reed, by which the pitch or number of vibrations in a given time is determined; and that this sound is afterwards modified and altered in its quality, by the cavities of the mouth and nose, which answer to the pipe that organ builders attach to the reed for a similar purpose. Accordingly, the whole of the phenomena which I am about to describe, will be found to result from the application of reeds to pipes and cavities of different and varying magnitude.

"Now it is important to the success of these experiments, that the tone produced by the reed should be as smooth and pure as possible. The coarse tone of the common organ reed completely unfits it for the purpose, and hence we find both Kempelen and Kratzenstein endeavouring to ameliorate it. Kempelen made the tongue of ivory, and covered its under side, as well as the portion of the reed against which it beat, with leather. Kratzenstein succeeded better, by introducing a most important improvement in its construction. Instead of allowing the tongue to beat upon the edge of the reed, he made it exactly to fit the opening, leaving it just freedom enough to pass in and out during its vibrations.(24) By this construction, when carefully executed, the tone of the reed acquires altogether a new character, becoming more like the human voice than any other instrument we are acquainted with, besides possessing within certain limits the useful quality of increasing its loudness, with an increased pressure of air, without altering its pitch.

"All the reeds I have made use of are constructed on this principle, in one or other of the forms represented in figures 4 and 5. There are all

Fig. 4.

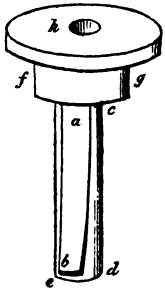
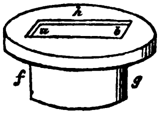


Fig. 5.



(24.) "Both these expedients are mentioned by M. Biot (*Physique* II.); but he has ascribed the first to M. Hamel (p. 170), and the second to M. Genié (p. 171), being apparently not at all aware of the existence of these memoirs of Kratzenstein and Kempelen. There can be very little doubt but that Kratzenstein is to be regarded as the true inventor of this *anche libre*," [an̲sh lībr, *unconfined reed*]. "This paper was published in 1780. See Young's *Nat. Ph.*, vol. 1, p. 783."

attached to blocks *fgh* furnished with a circular tenon⁽²⁵⁾ *fg*, by which they can be fitted into the different pieces of apparatus. * * * In fig. 4, *ab* is a tongue of thin brass fixed firmly at its upper extremity *a*, but capable of vibrating freely in and out of a rectangular aperture in the side of a small brass tube or reed *ced*,⁽²⁶⁾ which it very nearly fits. This is the original construction of Kratzenstein. In fig. 5, *ab* is the tongue, attached at *a*, and capable of vibrating through an aperture, which it very nearly fits, in a brass plate screwed to the upper surface of the block. This is similar to the construction of the *Mundharmonicon* or *Æolina*, lately introduced into this country from the Continent, but it appears to have been originally suggested by Dr. Robson.⁽²⁷⁾"

After verifying Kempelen's experiments, Prof. Willis found that by making the bell (see Note 23) shallower, and covering it by a piece of wood instead of the hand, he could produce all the five vowels, in this order U, O, A, E, I. "Cylindrical, cubical, and other shaped cavities," he continues, "answered as well, under certain restrictions; but I forbear to dwell on this form of the experiment because subsequent ones have rendered this more intelligible, and I merely mention it to shew the steps by which I was led from Kempelen's original experiment.

"The success of this attempt induced me to try the effect of cylindrical tubes of different lengths, and for the more complete investigation of this case, I constructed the apparatus represented in figures 7 and 8. T V is

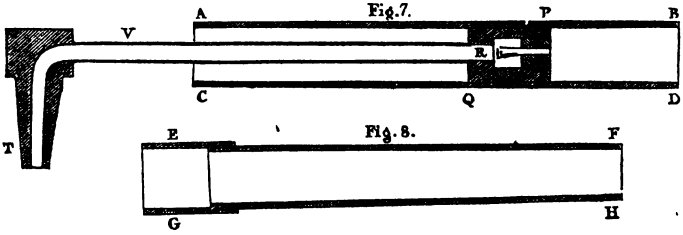
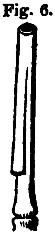


Fig. 7.

Fig. 8.

(25.) "Tenon," "a piece of timber inserted as a hold into a mortise," or hole for its insertion.—Smart.

Fig. 6.



(26.) "This brass tube is the *reed*, I believe, in the modern language of organ builders, and *ab* the *tongue*; but the term *reed* is often applied to the whole machine, and as such I have used it in this paper. In fact, in its primitive form, I suspect the whole was cut out of a single piece of reed or cane near a joint, as in figure 6, which is copied from Barrington's drawing of the reed of the Anglesey *Pibcorn* (*Archæol.* III. 33)."

(27.) "Art. Musical Trumpet; *Enc. Britt.*, Supplement to the 3 ed., 1801. Works IV. 538. Wheatstone in Harmonicon, Feb. and Mar. 1829." The most common instrument in which this reed is used is the *Accordion;* one of the most perfect arrangements is that of Wheatstone's *Symphonion* and *Concertina.*

a tube or *portevent*(28) bent at right angles, and connected with the wind-chest at the extremity T; this tube terminates in a wooden piston P Q, provided with a socket for the reception of the reed R, which is represented in its place. A piece of drawn telescope-tube, A B C D, is fitted to the piston, which is leathered so as to be air-tight, but allows the tube to be drawn backwards or forwards, so as to alter the length of the portion, P B, beyond the reed at pleasure; the horizontal position is given to the tube to make it more manageable. There are other tubes, E F G H, fig. 8, of the same diameter as A B C D, furnished with sockets at E G, which fit on to B D, and their lengths are different multiples of A B.(29)

"If therefore any reed be fitted to P Q, and the tube A B be gradually drawn out, it will shew the effect of applying to this reed a cylindrical tube of any length from nothing to A B; then if the tube be pushed back, and a joint E F equal to A B be fitted on, a fresh drawing out of the tube will shew the effect of any length from A B to double A B, and in this way we may go on to any length we please. The results of experiments with this apparatus I will describe in general terms.

No. 1. IEA O U U O AEI IEA O U
·*a* ·*b* ·*c* ·*d*

Let this line *abcd* represent the length P B of the pipe measured from *a*, and take *ab*, *bc*, *cd*, &c. respectively equal to the length of the stopped pipe in unison with the reed employed; that is, equal to half the length of the sonorous wave of the reed.

"The lines in these diagrams must, in fact, be considered as measuring rods placed by the side of the tube A B C D, with their extremity *a* opposite to the piston P, the letters and other indications upon them shewing the effect produced when the extremity, B, of the pipe reaches the points so marked, and the distance, therefore, from these points to *a* respectively being the length of the pipe producing the effects in question.

"Now, if the pipe be drawn out gradually, the tone of the reed, retaining its pitch, first puts on, in succession, the vowel qualities, I E A O U; on approaching *c*, the same series makes its appearance in inverse order, as represented in the diagram, and then in direct order again, and so on

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(28.) "The term *portevent* is always used for that part of the tube which lies between the reed and the *wind-chest;* and the term *pipe* for the portion which is between the reed and the open air."

(29.) "The inside diameter of A B C D in $1\frac{3}{10}$ in., its length is 1½ ft., and the whole length is 12 feet when all the joints are combined." One length is said to be a *multiple* of another, when it contains the same an exact number of times, hence 12 ft. is a multiple of 2, 3, 4, 6 or 1½ ft., and so on.

in cycles,(29 b) each cycle being merely the repetition of *bd*, but the vowels becoming less distinct in each successive cycle. The distance of any given vowel from its respective centre points, *a*, *c*, being always the same in all.

No. 2. IEAOU UOAEI IEAOU UOAEI IEAOU.
·*a* ·*b* ·*c* ·*d* ·*e*

" If another reed be tried, whose wave is equal to *a*, *c*, (No. 2), the centres of the cycles *a*, *c*, *e*, &c., will be at the distance of the sonorous wave of the new reed from each other, but the vowel distances exactly the same as before; so that, generally, if the reed wave *ac* be twice *r* inches long, and the length of the pipe producing any given vowel measured from *a* be *v* inches, the same vowel will always be produced by a pipe whose length" is found thus: multiply twice the number of inches (*r*) in the reed wave by any whole number, and add (or subtract at pleasure) to (or from) the result the number of inches (*v*) which the pipe must consist of, when measured from *a*, in order to produce the given vowel, or, in mathematical symbols, the length of the pipe " equal $2\,nr+v$, or $2\,nr-v$ (inches,) *n* being any whole number.

" When the pitch of the reed is high, some of the vowels become impossible. For instance, let the wave of the reed be *ac* (No. 3), where half of *ac* is less than the wave producing U.

No. 3. IE A O U
U O AEI
·*a* ·*b* ·*c*

" In this case, it would be found that the series would never reach higher than O; that, on passing *b*, instead of coming to U, we should begin with O again, and go through the inverse series. In like manner, if still higher notes be taken for the reed, more vowels will be cut off. This is exactly the case in the human voice; female singers are unable to pronounce U and O on the higher notes of their voice. For example, the proper length of pipe for O, is that which corresponds to the note *c*;" (30) and beyond this note in singing, it will be found impossible to pronounce a distinct O.

(29 *b*). A *cycle* is properly a *circle*, Greek κύκλος (kiuklos, or kīklos in M. G.), and is hence used for phenomena which recur in regular order.

(30.) " In speaking of musical notes, I shall denote their place in the scale by the German tablature. The octave from the tenor *c* to *b* on the third line of the

"The short and long U, however, are indefinite in their lengths; the the short U (as in *but*(31)) *seems to be the natural vowel of the reed*,(32) and as this is but little affected by the pipe except in loudness, between O and *b* (No. 1) this vowel will be found to prevail through a long space, and, upon approaching *b*, to change gradually into the long U (as in *boot*), which always appears more perfect the longer *ab* can be made. * * *

"The vowel distances in the first series, that is, those measured from *a* (No. 1), are always rather less than those measured from the centre points *c*, *e*, &c. This diminution varies with different reeds, and appears to be due to some disturbing effect of the reed itself, or the short pipe annexed to it, which I have not been enabled as yet to examine so satisfactorily as I could wish. For this reason, I have preferred, in the following table, obtaining the vowel lengths from the second and third series, by bisecting(32 *b*) their respective distances from each other measured across *c*, which appears liable to no such alterations. These lengths, in inches, occupy the third column. For want of a definite notation, I have given, in the second column, the English word containing the vowel in question. The fourth contains the actual note of the musical scale corresponding to a stopped pipe of the vowel length, supposing O to yield *c″*, which it does as nearly as possible. In effect, its length is $4\frac{7}{10}$ inches, which, with Bernouilli's(33) correction,(34) gives four inches for the length of the pitch pipe, and this will be found to give *c″*.

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treble is marked once, thus, *c′*, the next above, twice, *c″*, and so on. As a standard for pitch, I use a pitch pipe, which is made to sound by a small pair of attached bellows, yielding a constant pressure of $2\frac{5}{10}$ in. The internal dimensions are $\frac{85}{100}$ by $\frac{9}{10}$ in, and 1 foot long. *Lumière* $\frac{16}{100}$ in. An attached scale is graduated to shew the actual length of the pipe (that is, the distance from the bottom of the pipe to the bottom of the piston) in English inches and decimals."

(31.) It will be shewn, in Chap. 5, sections 2 and 3, that it is better not to call the vowel in *but*, "short;" the name proposed for this species of vowel is "stopped." A stopped vowel cannot be prolonged, as a short vowel can, without entirely losing its character. We presume that Prof. Willis means to indicate the vowel sound in *burr*, which may be indefinitely prolonged, and which by almost all writers is confused with the vowel in *but*. The words "cur, curry," serve to shew the resemblance and the difference.

(32.) The vowel sound in *burr* is by many persons termed the *natural* vowel. It is the nearest approach to the *un*modified voice; but voice can no more be produced in an *absolutely unmodified* state, than *matter* can exist without *form*.

(32 *b*.) Or, halving.

(33.) "Bernuilyi," or "Bernuiyi," in the Parisian pronunciation.

(34.) "*Mem. Ac. Par.*, 1762, p. 460. Biot, *Phys.* II., p. 134."

TABLE.

I	see	$\frac{38}{100}$ (?)	g'''''
E	pet	$\frac{6}{10}$	c'''''
	pay	1	d''''
A	pad	$1\frac{8}{10}$	f'''
	part	$2\frac{2}{10}$	d'' flat
A°	paw	$3\frac{5}{100}$	g''
	nought	$3\frac{8}{10}$	e'' flat
O	no	$4\frac{7}{10}$	c''
U	but	indefinite	
	boot		

"I have found this table as correct a general standard as I could well expect; for vowels, it must be considered, are not definite sounds, like the different harmonics of a note, but, on the contrary, glide into each other by almost imperceptible gradations, so that it becomes extremely difficult to find the exact length of pipe belonging to each, confused as we are by the difference of quality between the artificial (?) and natural vowels. Future experiments, in more able hands than mine, will, I trust, determine this matter with greater accuracy, and I should not even despair of their eventually furnishing philologists with a correct measure for the shades of difference in the pronunciation of the vowels by different nations."

"One source of fallacious decision, however, it must be remarked," says Sir John Herschell,(35) after citing this table and paragraph, "will subsist in its application, in the effect of contrast, on which much of the difference between vowels depends. Its influence, indeed, may be traced in the above table itself. Thus, Mr. Willis, assisted, no doubt, by the contrast arising from frequent and rapid transition, has been able to discriminate between the vowel sounds yielded by pipes of the lengths $3\frac{5}{100}$ and $3\frac{8}{10}$, though the sounds in the exemplifying words *paw* and *nought*, which he has chosen, are so closely allied that we confess our own inability to detect any shade of difference."(36)

There are other points in which the above table appears to us to be defective, but we think it best to defer our remarks for the present, as they will be better understood at a subsequent period.

Prof. Wheatstone, after giving a very brief abstract of that portion of

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(35.) SOUND, *par.* 375.

(36.) "Let the reader pronounce slowly and distinctly the words paw, gnaw, naughty, nought, for his own satisfaction."

Prof. Willis's paper, which we have taken the liberty of printing almost at length, proceeds thus: (37)

" Mr. Willis further states that cylinders of the same length give the same vowel, whatever be their diameter and figure; and that so far as he has tried, he has always found that any two cavities yielding the identical note when applied to the embouchure(38) of an organ pipe, will impart the same vowel quality to a given reed, or indeed to any reed, provided its note be flatter than that of the cavity.

" From these experiments it is evident that the forms stated by Kratzenstein, as producing different vowels, are perfectly arbitrary. The entire series of vowels can be produced from tubes of either" (any one) " of his forms by merely changing its dimensions.

" Mr. Willis finally concludes, from his experiments, that the vowel quality, added to any sound, is merely the co-existence of its peculiar note with that sound; this accompanying note being excited by the successive reflections of the original wave of the reed at the extremities of the added tube.

" This view of the matter naturally associates the phenomena of vowel sounds with those of multiple resonance, a subject first investigated by Prof. Wheatstone.

" The phenomena of simple or unisonant resonance are so well known that we need only call attention to one or two of the most striking facts. If a vibrating body be brought near a column or volume of air, which would be capable of producing the same sound were it immediately caused to sound as an organ-pipe or otherwise, then the sound of the vibrating body is greatly reinforced, as when an harmonica glass is brought before a unisonant cavity, or when a tuning fork is placed at the embouchure of a flute, the apertures of which are stopped, so that if blown into, the flute would sound the same note; in the latter case the experiment is more remarkable, as the sound of the tuning fork is scarcely itself audible. The same effect takes place when the cavity of the mouth is adjusted so as to be in unison with the tuning fork.

" We now come to the new facts of resonance: a column of air will not only enter into vibration, when it is capable of producing the *same* sound as the vibrating body which causes the resonance, but also, when the number of the vibrations which it is capable of making" (in a given time; say one second,) " is any simple multiple of that of the original sounding body," the time for which the number of vibrations is reckoned

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(37.) *London and Westminster Review*, Oct., 1837, pp. 34—37.

(38.) " Aṉbushúr," opening, or mouth-piece.

being of course the same in either case, "or, in other words, if the sound to which the tube is fitted is any harmonic of the original sound.

"For instance, if a tube closed at one end by a moveable piston is taken, and its length adjusted to six inches, it will resound as an unison to a C tuning fork; and if we shorten the length of the tube to three inches, the unison will no longer be reciprocated, but its octave will be heard. The same effect is produced by altering the cavity of the mouth.

"By placing a vibrating lamina(39) which produces a lower sound than can be obtained from a tuning fork, the tongue of a Jew's harp, for instance, and successively adjusting the column of air so as to be one-half, one-fourth, one-fifth, &c., of the column reciprocating the fundamental sound, the octave, twelfth, double octave, seventeenth, &c., will be produced. The relative numbers, considering the vibrations of the tongue" of the Jew's harp, "as unity, are 1, 2, 3, 4, 5, &c. The mouth produces precisely the same effect as this changeable tube does, and all the beautiful sounds which Mr. Eulenstein(40) manages with so much skill are pro-

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(39.) "Lam·inɐ," or thin plate, as a metallic spring, &c.

(40.) Karl Eulenstein (=Karl Oil·ənshtain·) was born in the year 1802, at Heilbronn (=Hailbron), in the kingdom of Würtemberg (=Vúr·təmberg). His parents were engaged in business on a small scale, but he lost his father while still a child. At seven, he was put to school, where he received instruction in music as a chorister. His mother was opposed to his devoting himself to music, a passion for which was very early developed, and apprenticed him to be prepared for the office of clerk, and subsequently to a bookbinder, in neither of which places did he stop many weeks. Finally, he was apprenticed to a dealer in hardware goods, whose wife (that soon became sole mistress, by the death of her husband) had a great distaste for music, and insisted upon his giving up all his instruments, violin, flageolet, French horn. Among other hardware articles, however, this lady dealt in Jew's harps, and Eulenstein tried to solace himself, for the want of other instruments, by performing upon this, which he did at night, and frequently under the bed clothes, for fear of his mistress discovering him. "One night, he fell asleep with a Jew's harp in his mouth, and was awakened by a scratch in the face from the point of the spring. To remedy this inconvenience in future, he covered it with a little sealing-wax. This he found altered the pitch; and, by means of loading the end of the tongue more or less heavily, he tuned a series of harps with the greatest nicety, and was thus enabled to command a very extensive scale, and to modulate, with surprising truth and accuracy, into every variety of key." At length, his mother permitted him to go and seek his fortunes as a musician. For a long time he met with little or no encouragement, and in Paris was reduced to great distress, till M. Stockhausen (=Shtokhau·zən), "the husband of the celebrated singer, '*talked him about*,' and succeeded in procuring him several profitable engagements with his Jew's harp, and fairly set him afloat again." He then came to London, but had again no success, till patronized by the Duke of Gordon, (then Marquis of Huntley.) After a successful season, he returned to Heilbronn, where he studied music, and labored diligently at the guitar. In 1828, duced by this means; they are multiple resonances of the column of air, and not the vibrations of the" (metallic) "tongue itself, as was formerly supposed.

"Similar results are obtained when the vibrating tongue of an Æolina is brought before a tube, and its length is altered, and this case resembles Mr. Willis's arrangement. The same multiple resonances are produced also when the cavity of the mouth is substituted for the tube. In these cases the fundamental sound is louder than when the tongue of the Jew's harp was employed. The sound of the larynx itself may be substituted for that of the vibrating tongue, and similar harmonic sounds will be heard; this experiment may easily be made by placing a piston tube before the mouth, while the voice continues to sound rather a low note. About two years ago (1835?) a young man named Richmond exhibited a novel kind of musical performance with the voice: on examining the circumstances under which the sounds were produced, it was ascertained that the continued sound or drone was produced by the larynx and that he had acquired the art of adjusting the cavity of the mouth so as to fit it for resounding to any multiple. In this way he was able to command these subordinate sounds in any succession, and even to dwell upon them; and he could thus perform a great number of airs.

"Some kind of sounds are better suited to produce these multiple resonances than others, and it is a universal fact, that wherever these subordinate sounds can be distinguished, there also the vowel qualities are heard; and reciprocally, when a sound puts on successively different vowel qualities, these multiple resonances are audible. The tongue of a Jew's harp, which so readily gives rise to these subordinate sounds, is obedient not only to the vowel sounds, but to almost all the articulations of speech. The free reed or æolina tongue, when it is such as can enter readily into vibration, is affected in a similar manner; but when it is too rigid, though it may produce as clear a musical sound as before, the multiple resonances and vowel qualities are equally lost; not, perhaps, be-

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he returned to London, and had again no success. About this time, "the iron of the Jew's harp had affected his teeth, and produced general decay," and he suffered great pain from any attempt to play upon this instrument. Since this time, he has performed comparatively rarely, and always with considerable suffering; but he still continued to give concerts down to 1833. His last was given at Clifton, "the breaking of his last tooth obliging him to relinquish." He soon after married a German lady; and in September, 1834, established himself, as a teacher of the German language and the guitar, at Bath, where he still resides (1844). These particulars are taken from a little work entitled "A Sketch of the Life of C. Eulenstein, the celebrated performer on the Jew's Harp. 2nd edition; London, 1840;" p. 57.

cause they do not exist, but because they are overpowered by the original sound of the reed.

"We do not mean to assert that each multiple resonance is a distinct vowel sound. But we infer, that when a tube is added to a reed or vibrating tongue, whatever may be its length, a quality is added to the original sound, which depends on the feeble vibrations of the air in the added tube: these increase in number in proportion to the shortness of the tube; and when the number of vibrations thus excited is any multiple of the original vibrations of the reed, the energy of the resonance is so greatly augmented as to produce the effect of a superadded musical sound.

"Thus it is evident that the vowel qualities and multiple resonances are different forms of the same phenomena."

The reader is now in possession of the principal modern discoveries concerning the general nature of the vowel sounds. The subject cannot be said to be entirely cleared up, but much has been done towards its elucidation. An examination of the principal vowel qualities we are acquainted with, together with a notation by which every possible shade of sound may be accurately represented will form the subject of Chapter V.

CHAPTER 4.—ON THE CONSONANTS IN GENERAL.

IN the preceding chapter we took a general survey of the modifications produced in the sound of the voice by such alterations in the forms of the cavities of the mouth, &c., as did not amount to a total, or very nearly a total, stoppage of the aperture through which the air had to pass on leaving the lungs. We have, therefore, next to consider these two cases, which we shall at first suppose to belong to the first mode of the second and third kinds of action mentioned in chap. 2, p. 21.

In the first of the two cases just alluded to, the passage of the voice is entirely cut off, and the effect of the modification is only felt *during* the opening and closing of the mouth; thus in the words e*bb*, a*dd*, e*gg*, the voice is in this manner entirely cut off as the mouth closes, and in the words *b*ee, *d*ay, *g*o, the voice is only heard while the mouth is being opened. The instant that the mouth closes, the sound ceases; or so nearly at that instant, that the period of time during which it really lasts (a very small fraction of a second) may, for the present, be disregarded.(1) But if the contact is not complete, as in the second case, mentioned

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(1.) It is, however, an important fact, that the sound is not cut off absolutely instantaneously; and we shall have occasion to take this into consideration hereafter.

above, the duration of the voice will be heard as a faint buzzing sound; as in the words ha*v*e, see*the*, whi*z*, ju*dge*.

We have, then, in all these cases, a modification of the voice brought in a manner analogous to that considered in the last chapter. Now, it has never been customary to have a sign for the simple unmodified voice, because the voice cannot be produced but in some *shape*, as it were, caused by the opening of the mouth or nostrils, so that we cannot hear voice except in a modified state, as long as it must pass through the necessarily modifying organs, the mouth, &c. Thus we may talk of matter generally, and of a *shapeless* mass, but we can never take cognizance of matter except when modified by certain conditions; nor can we see a mass that has not a definite (although irregular) form. It would appear, therefore, that we must suppose that the signs employed for the purpose of regulating the arrangement of the parts of the mouth, &c., necessarily imply the *putting on* of the voice. In ancient languages, this seems to have been universally the case for *all* the three kinds of actions mentioned in Chap. 2. It was, however, soon found that the parts of the mouth might be arranged in more complicated manners than were expressed by the individual signs of the alphabet, and that this complication arose from compounding these several arrangements into one, so that the new compound arrangement might be very well expressed by making two or three of these marks in succession, and placing another mark to shew that the voice is not to be heard till after the last ajustment had been completed. This is the method we find used in the Hebrew, Arabic, and Sanscrit alphabets, in which each letter is supposed to represent a certain sound, produced by arranging the parts of the mouth, &c., in a certain position, and setting on the voice, unless a mark of *quiescence*—called shəwā' (=shəvā) by the Hebrews, and jazmü (=jezmon, or jezm) by the Arabs—were annexed, being written either under (as in Hebrew and Sanscrit) or over the consonant (as in Arabic).

In the later alphabets, which are but modifications of the older ones, another method has been chosen, which is, in many respects, more convenient. In the *vowel* signs, the position of the parts of the mouth, and the setting on of the voice, are, as before, indicated by a single character, an additional mark (h, or H) being prefixed when the vowel sound is preceded by the breath; while, in the second and third kinds, the sign for the *first mode* only represents the modification itself, whereas, that for the *second mode* indicates *both* the modification *and* the putting on of the breath.(2) This must be further explained. We may produce a sound

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(2.) This is a mere matter of convenience in writing and printing. It would not only by the voice, but by the explosion of the breath, or its condensation in the mouth. In producing this sound the larynx has no share, and the result is, therefore, termed *whispering*, and not speaking. The consonants, accompanied by this whispering effect, belong, as already indicated, to the second mode of action, spoken of in Chap. 2. If the reader will pronounce the words *his*, *hiss*, and endeavour to lengthen their sounds as much as possible, he will form a clear idea of the essential difference between a spoken and a whispered consonant.

The reader will now have a general notion of the nature of consonants; and, as a future chapter is devoted to the details, we might conclude here, were there not a question, which has been so often agitated, that it may be, perhaps, worth while to point out the ambiguity which has occasioned the dispute. "? Can a consonant sound by itself," is the question to which we allude. The word *consonant* (from *con*, with, and *sonans*, sounding) would seem to favor the idea that it *could* be sounded alone, but that it is *generally* (or, as some say, *always*) sound *with* some other letter.

Now, we have just stated that the true consonant consists in the ajustment of the parts of the mouth, which mere ajustment can, of course, produce no sounds, and, therefore, the set of symbols (also generally called *consonants*, but more correctly termed consonant *signs*) which represent these ajustments do not represent any sound. This ajustment may, however, be accompanied by the voice or the breath; in the first case, the voice is also produced under a modified form, and therefore represented by a vowel sign; but, in the latter case, both the breath and

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have been more philosophical to have proceeded thus:—Let there be a mark for the *voice* simply, say ’; let there be a sign for each arrangement of the parts of the mouth, &c., as A, E, I, O, U—B, D, G, &c.; and let there be a mark to imply the *breath*, as ‘. Then we might symbolize thus: A’ is a simple vowel; A’‘ an aspirated vowel; B’ a simple consonant, followed by the voice; B‘ a simple consonant, followed by the breath; B A’ a spoken consonant, followed by a vowel; B‘ A’ a whispered consonant, followed by a simple vowel; B‘ A’‘ a whispered consonant, followed by an *aspirated* vowel—a combination which does not occur in English, but is common in Sanscrit, and is heard in the Irish brogue. Thus, if A’, E’, I’, O’, U’, be the sounds represented by the italic letters in the words m*ar*, m*ay*, m*e*, m*ow*, m*oo*, respectively, and B, D, G, the ajustments indicated by the italic letters in *b*ee, *d*o, *g*o, respectively, we shall have BA’=*baa;* DE’=*day;* GO’=*go;* while B‘E’=*pay;* D‘I’=*tea;* G‘I’=*key*, &c.; E’‘=*hay;* I’‘=*he;* E’‘D‘=*hate*, &c. From these instances, the conveniences of the mode of symbolisation, in which A’, E’, I’, O’, U’, are represented by simple signs, as a, e, i, o, u, and B‘, D‘, G‘, by the simple signs, p, t, k, while E‘’, &c., is denoted by prefixing some sign to the mark chosen to represent E’ (thus, ʜe), will be very evident, although the *law* of symbolisation appears, at first sight, to be somewhat complicated.

the ajustment are represented by the *same* sign; that is, a single symbol represents both the ajustment and the contemporaneous emission of breath, and it, therefore, *does* represent a sound. Now, it happens unfortunately that the word *consonant* is, in common language, also applied to these signs which do represent *a* sound, although not a *vocal* sound; and hence it is both true and false that consonants can sound of themselves. If we discriminate the classes, calling the former symbols "spoken consonant" signs, and the latter "whispered consonant signs," then the real answer is, that the first do *not*, and the second *do*, represent a sound, and, therefore, in common parlance, the first can*not*, and the second *can*, sound by itself.

This is the view of the case which we think it best to take; others suppose the element of the voice to be inherent in the spoken consonants, so that they, also, can be pronounced; but we cannot agree with them in this conclusion. Since, then, *s*, *sh*, *th*, *f*, &c., can be pronounced independently, of course, *sp*, *sht*, *tht*, *ft*, *ps*, *psh*, &c., constitute real sounds; but these sounds are not vocal, and are, therefore, not generally recognized as constituting syllables. Dr. Orpen observes: (3) "It is commonly said, that a consonant cannot be pronounced without a vowel, and, in fact, its name was given, probably, from this theory, but it is altogether a mistake; for the consonants, *p*, *t*, *k*, have no vocal sound at all, and yet can be pronounced with an *s* before or after them without any vowel, or any vocal sound; as in *ps*, *ts*, *ks*; *sp*, *st*, *sk*; whose whole compound sound is an affection of the breath alone, and not of the voice. Again, *b*, *d*, *g*, have a slight vocal sound in their essence, but that sound is not a vowel, and these letters can be united to *z*, without any vowel; as in *bz*, *dz*, *gz*; *zb*, *zd*, *zg*. Thus, too, *m*, *n*, *ng*, have a vocal sound essential to them, but it is emitted through the nose, and, therefore, cannot possibly be a vowel sound;(4) and, besides, they can be united with *s* or *z* without any vowel; as *ms*, *mz*; *ns*, *nz*; *ngs*, *ngz*; or in *sm*, *zm*; *sn*, *zn*; *sng*, *zng*.(5) Besides, *f*, *th*, *s*, *sh*, *lh*, *rh*, *kh*, have no vocal sound, being mere affections of the breath, yet they can be united with each other, and with other consonants, in various ways, without any vowel; as in *fs*, *ths*, &c., *sf*, *sth*, &c. The corresponding vocal consonants, too, *v*, *dh*, *z*, *zh*, *l*, *r*, *gh*, have a vocal sound essential to them, but that sound is not a vowel, and they

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(3.) The *Pestalozzian Primer*, pp. 127—129.

(4.) If Dr. Orpen means to imply that there can be no nasal vowels, he is certainly in error.

(5.) We question those cases in which z occurs; and we believe that, in the other cases, the sounds are what we shall represent by ʍ, ʌ, ∩, being the *whispered* consonants, corresponding to what we denote by m, n, ɴ.

also can be united with various other consonants, without any vowel at all; as in *vz*, *dhr; ls*, *lz; rs*, *rz*, &c., &c.; and even *w* consonant, and *y* consonant, and *h*, which are the three aspirates, can be sounded alone, and without a vowel, though in words they always precede a vowel.(6)

"The truth is, that the possession of a vocal sound is not the characteristic distinction of a vowel, for we can articulate vowels in whispering as well as consonants, though we then use only non-vocal breath, and not vocalized breath, or voice, *at all.*(7) Each vowel, as it is called, has, therefore, a specific sound of its own, arising from the mere expiration of breath, though not vocalized, through the peculiar mechanism in the mouth, used as its articulation; and hence, in this point of view, there is no real distinction whatever between vowels and consonants, both being, in whispering, affections of mere breath; but in common speaking, where voice is always used, *there is this distinction between vowels and consonants, that, in the former, we use a distinct musical sound in the larynx along with each of them, and emit it through their peculiar mechanisms, while, even in the vocal consonants, there is only a non-musical murmur of the voice.*"

We have italicized the last few lines, for the purpose of taking a slight exception. The sound in the larynx is not necessarily *musical;* in speaking it is generally *not* musical (in the sense given to this word by Sir J. Herschell, see suprà, p. 12, last par.); and, secondly, that the spoken consonants are not accompanied merely by a "*non-musical murmur,*" but by a clear vocal sound, or by none at all.

We have thus glanced generally over our subject, and pointed out the peculiar difficulties under which an analysis of spoken sounds necessarily labours. As regards the vowels, they may be safely said to be entirely subjective; and that any analysis that can be offered, can only be considered as that of the author's own sensations, which may differ from those

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(6.) The aspirate is found without a vowel in Sanscrit; and the *weakened consonants* (see infrà, chap. 8, sect. 4) seem to imply to imply the existence of *y* (or *yh*, chap. 6, sect. 1) not followed by a vowel.

(7.) The absoluteness of this assertion may be doubted. That vowels can be distinguished in what is *commonly* termed "whispering," cannot be denied; but ? do we mean, in common language, by this word the *total* absence of vocalized breath. We think that it will be usually found that a "whisper" contains a very perceptible, although small, amount of vocalized breath. We must be more strict in our language; in this work we have employed a "whisper" for the absolutely *un*vocalized breath. But even this whisper will be modified in a *similar* manner to that in which the voice is modified, when passing through the peculiar modifying cavities. Hence *differences* may be perceived *corresponding to,* but far from being *identical with,* the vowel qualities.

of the readers. It will not, therefore, follow that the analysis is false, but simply that the subject-matter is different in the two cases. The difference will not be found to be very great, however, in any case. But, ? how is the idea of the sounds and their modifications to be conveyed to the reader. This is another source of difficulty. The only means which we possess is to present the reader with a certain number of words (*key words*, as they may be called), in different languages, which, as *we* pronounce them, produce in us the sensations which we shall analyse. ? How can we guarantee that our readers shall pronounce them in such a manner (we do not say as to experience perfectly similar sensations, for of that we could never be sure, but) that *we*, if we heard them, should experience the same sensations as we did when we pronounced the words. We can only hope that they will pronounce them nearly in the same manner, and we shall try to select such words as are (according to our experience) most generally pronounced alike by the majority of speakers. These fears principally regard the vowels, for the distinctions between the consonants are less fine; these do not, like the vowels, glide into one another by almost imperceptible degrees. We shall recur to this subject, and consider it at due length in Part II., Chap. 1; and shall now proceed to the detailed examination of the elements of speech.

CHAPTER 5.—ON THE VOWELS IN DETAIL.

SECTION 1.—*On the Long Vowels.*

IN Prof. Willis's experiments, already given (Chap. 3), we are furnished with something approaching to a standard for measuring vowel sounds. The shortest length of his pipes gives *e* in m*e*, and the longest, previous to the recurrence of the vowels, *oo* in m*oo;* while an intermediate length gave *a* in m*a*r. We may express this by saying, that the latter sound, *a*, is intermediate to the two former; and generally when we say that any sound is intermediate to two other sounds, we shall mean that they require pipes of intermediate lengths to generate them. We shall represent these sounds by ī, ū, ā, respectively. These sounds, considered in relation to the human organs of speech, correspond respectively to the greatest diminution of the aperture of the throat by means of the tongue, to nearly the greatest diminution of the external orifice of the mouth by means of the lips, and to nearly the greatest opening of the mouth and throat. These sounds are, in different languages, designated in different manners;

but the signs we have chosen to represent them may be considered as the normal forms assigned to them in all languages for which the Roman alphabet characters are used.

Intermediate to ī (which corresponds to ·38 inches on Prof. Willis's pipe, see p. 35, suprà) and ā (2·2 inches), lies ē (1 inch), as represented by *ay* in m*ay*. Intermediate to ā and ū, is o̱ (4·7 inches), as represented by ~~*ow* in m*ow*~~. These five sounds, in the order ī, ē, ā, o̱, ū, constitute what are commonly called the *five vowels*, to which number the vowel sounds are usually supposed to be restricted.

The vowels ē, o̱, are apt to be pronounced impurely in England. When the sound of ē is lengthened, the tongue is liable to approach gradually, and almost imperceptibly, to the position requisite for the pronunciation of ī; similarly, o̱, upon being lengthened, degenerates into ū. By care and trial, this defective mode of speaking can be remedied; and we particularly mention it, because, if our readers suppose that we are speaking of such impure sounds, they will naturally disagree with much that we shall have to say.

Between ā and o̱, we have ō (3·05, or 3·8 inches), as represented by *aw* in m*aw*; and, according to Prof. Willis, at some point between o̱ and ū, is another vowel, which we will call ɐ̱. Of this vowel, however, which corresponds to *y* in m*y*rrh, he remarks, that it "seems to be the natural vowel of the reed," (suprà, p. 34). It is, we believe, the *voice* in its least modified form, being produced while the speaking apparatus is in its most natural condition. If we pronounce the vowels ī, ē, ā, ō, o̱, ū, in this order, we see clearly that they follow one another in a natural manner. ? Where are we, then, to insert ɐ̱. According to Prof. Willis, between o̱ and ū; but, on repeating ī, ē, ā, ō, o̱, ɐ̱, ū, there is a clear break in the continuity of change in the position of the vocal organs, the mouth being more contracted for o̱ than for ɐ̱, being *most* contracted for ī, gradually widening up to ō, and then as gradually closing towards ū. Various places have been proposed for this vowel. Dr. Orpen (1) places it between ā and ō; others insist that its proper place is between ē and ā. To ourselves, the most natural place appears to be between ō and o̱; so that the series of seven vowels will be ī, ē, ā, ō, ɐ̱, o̱, ū.

For the circumstance of ɐ̱ occurring in the organ-pipe between o̱ and ū, or rather just before ū is heard, we have no means of accounting; but the following considerations serve to reconcile the other diversities of opinion. The various vowel-modifications of the voice are divisible into three classes, the contracted guttural, open guttural, and contracted labial.

(1.) *Pestalozzian Primer*, pp. 77—79.

We will designate these by the old English letters, 𝔦, 𝔞, 𝔲, respectively. Then to the class 𝔦, belong ī, ē; to 𝔞, belong ā, ō, ɐ̱; and to 𝔲, o̱, ū. The primary or typical vowel in 𝔦, is ī; in 𝔞, ɐ̱; and in 𝔲, ū. The non-primary vowels in each class have a tendency, upon prolongation, to pass into the typical vowel: this we have already remarked for ē and o̱; and the reader will discover that the same is true for ā and ō, each of which, when prolonged, have a tendency to terminate in ɐ̱. Consequently, it is difficult to determine the relative position of ɐ̱ with regard to ā and ō, because it is the chief element of *each of them*. As, however, ɐ̱ naturally follows when ā and ō are prolonged, we think it best placed *after* them, and we have, therefore, adopted this arrangement.

This tendency of vowel in each class to terminate in the typical vowels of that class, has been considered so important by Mr. Cull, that, in his article STAMMER *(Penny Cyclopædia)*, he grounds a division of the vowels upon it, classing some as monophthongal,(2) and others as diphthongal. The monophthongal he considers to be those expressed by the italic letters in *e*nd, *ee*l, h*e*r, *i*n, and *oo*ze, of which the first and fourth will be considered hereafter; while the second, third, and fifth correspond to our ī, ɐ̱, and ū, respectively. The other vowels he calls diphthongs. We shall recur to this classification in a future chapter.

It may be mentioned that, in the Sanscrit language, ē, o̱ are considered as diphthongs compounded of ā (? ɐ̱) and ī, and of ā (? ɐ̱) and ū respectively.(3) Bopp compares this with the French apparent diphthongs, ai, au = ê, o̱. We may compare our digraphs ai (in p*ai*n) = ē, and au (in m*au*l) = ō.

Thus far we have considered the vowels as acoustical phenomena, quite independently of the means by which they are produced by the human organs of voice. We subjoin the following particular account of the mechanisms by which they are produced in this case, extracted from Dr. Orpen's instructions for teaching the deaf to speak:—(4)

"In pronouncing the sound (ā), we should make him (the deaf pupil) observe that our mouth is pretty wide open; that our tongue lies flat in

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(2.) From *μόνος* (mŏnos, or monos, in M. G.), *single*, and *φθόγγος* (fthoɴgos) *voice*, comes monophthongal (mŏnophthoɴgəl), *single-voiced*, an epithet corresponding to our "simple vowels." Diphthongal is from *δὶς* (dis, or dhis, in M. G.), *twice*, and *φθόγγος*.

(3.) *Bopp*, *Vergleichende Grammatik*, sec. 2. He calls the first element "a short *a*," which we know, from *Sir W. Jones* (Works, vol. iii., p. 270), means "a short ɐ̱" (or ə) in Sanscrit.

(4.) *Pestalozzian Primer*, pp. 145—150.

the bottom of our mouth, neither retracted, nor pushed forward, neither dilated, nor contracted, but with its tip just behind the back of the lower front teeth, and its sides just touching the insides of the lower side teeth, at both sides. Thus we see that, by the under jaw being lowered, to open the mouth, the two rows of front teeth are separated from each other about three-fourths of an inch, and the upper surface of the tongue, which itself descends, of course, with the under jaw, is distant from the arch of the hard palate about an inch. While these parts of the mouth are in this position, we cause vocalized breath, or voice, to be formed in the larynx, by the vibration of its sides from the outward current of air, and emit it through this mechanism, which thus articulates the sound of ā.(5) And as this sound is not either as bass, as the vowel sound ō, nor as treble as that of ī, the larynx is not either much depressed towards the chest, or much elevated towards the throat; the former, viz., depression of the larynx, being essential to a bass sound, and the latter, viz., its elevation, being essential to a treble sound.

" The mechanism of ē is produced by raising the jaw, so as to make the two rows of front teeth come within half an inch of each other, and the upper surface of the tongue, of course, come within about three quarters of an inch of the arch of the hard palate, and by emitting vocalized breath, or voice, through this mechanism; the larynx being a little more raised towards the throat, as the sound is a little more treble, than in ā.

" In ī, the lower jaw is so much raised, that the two rows of front teeth are only about a quarter of an inch separate, and the tongue is also, of course, so much raised, that its upper surface only leaves a shallow channel, from back to front, about a quarter of an inch deep, between it and the arch of the hard palate. The larynx is also raised, as far as it can be, towards the throat, as this is the most treble of all the vowels, and the vocalized breath, now formed in the larynx, is emitted through the mechanism of the mouth just described.

" The other trio of vowels, ō, o̱, ū, are all, in some measure, essentially bass sounds, and, therefore, the larynx is depressed in them all towards the chest, which both shortens and widens the windpipe; and also, which is its chief object, enlarges, backwards, the cavity of the mouth, into which the sound formed in the larynx enters.

" In all these sounds, too, the tongue is drawn back in the mouth, which must be the case whenever the larynx, to which the root of the tongue is more or less attached, is drawn down as just described; but the chief object of it is, to increase still more the cavity of the mouth, in which the sound is reveberated and made bass.

(5.) Not to confuse the reader, we use our own symbols throughout.

" In the vowel sound ō, the mouth is as wide open as it can be, the aperture between the lips presenting a kind of upright oval, whose longer diameter is from top to bottom; the tip of the tongue is drawn rather away from the front teeth, and the whole tongue retracted back in the mouth; the larynx is lowered down towards the chest, and while producing a bass sound in the larynx, we emit it through the above described mechanism in the mouth.

" In the vowel sound o̱, the mouth is less open, the lips present a circular aperture between them, the tongue is more retracted back into the mouth, the larynx is drawn down more, and, while making a more bass vocal sound in it, we emit it through this peculiar mechanism.

" As to the vowel ū, its mechanism is as follows:—The mouth is less open, the lips are nearly closed, so as to leave only a very small transverse aperture between them, or a long ellipse (⬭), whose greatest diameter is across, from one corner of the lips to the other. The tongue is drawn very far back in the mouth, the larynx is drawn lower down towards the chest, and, while producing a very base sound in it [the larynx], we emit it [the sound] through the mechanism just described.

" In the mechanism of ɤ̱, the root of the tongue and the soft palate are chiefly concerned. The tongue is a very little drawn back in the mouth, and the surface of its root is a little depressed, so as to prevent its touching the soft palate (the hanging fleshy curtain at the back of the palate); the larynx is also a little depressed, and a guttural flat sound is produced in it, and emitted through the above mechanism."

These seven vowels, ī, ē, ā, ō, ɤ̱, o̱, ū, as we have seen by the preceding examples, all occur in English. There are, however, certain varieties of these sounds, which are of frequent occurrence in foreign languages, (although it may be doubtful whether they are found in English,) and which it is necessary to discriminate with accuracy. As they lie *between* those just considered, they may receive the particular name of "*Intermediate Vowels*," the title of "*Principal Vowels*" being reserved to the former.

Between ī and ē lies a peculiar Slavonic vowel, represented by *y* in Polish. In Russian and Polish it is one of the most frequent vowels; but it is extremely difficult for an Englishman to appreciate and imitate when long and unaccented. To us, however, it appears that when a singer endeavours to lengthen the vowel in "lip" (infrà, sect. 3), he involuntarily produces this sound. We also think that we recognize this sound, when *short* (infrà, sect. 2) and *un*accented, after *r* in "carr*y*, Mar*y*," in which the *y* is not precisely ī unaccented, as our readers will find upon trying to keep the ī very distinct in pronouncing them (suprà, p. 24.)

De Stains(6) says, that "a sound similar to the French *é* is heard in the word *sleepy*, which would be written in that language *slípé*. We are aware that this is not the pronunciation indicated by Walker, who gives the same sound to both syllables, as if written *sléépé* [slīpī.] This last pronunciation may be the correct one. We do not presume to argue on this point; we merely mention the other (the one we have always heard in conversation) because it affords us the opportunity of describing to the English ear the sound of the French é." This sound, when modified by being preceded by a spoken consonant, and especially r, appears to us to approximate very accurately to this Slavonic vowel, which we shall symbolize by î.

Between ē and ā is a broader sound of ē, heard in the French words *chéne, féte, pére*, and, as we think,(7) in the English words m*a*re, ch*a*ry, th*e*re, &c., of which more hereafter. This sound we shall denote by ê. Many persons consider the sound, in the English words just cited, to be ē, and others to be the quasi diphthong (Chap. 6, Sec. 3) eə. We shall content ourselves with drawing attention to the following comparisons:

player with French *plaire;*
sayer (one who *says*) with the Scotch *sair;*
hehr (German) with *herr* (also German).

This is the Italian *e aperto* (=ê *a*pêrt*o*) or "open ê," the ē being *e chiuso* (=ē kyuz*o*) or "shut ē."

Between ā and ō is a broad sound of ā, frequent in French, and by all French ears confused with ō itself. We shall represent this sound by â. It is heard in the French words p*á*te, ch*á*tir. Great judgment is required in the speaker to make this sound broad enough, without letting it degenerate into ō. In Persian and Hindūstānī, this confusion of â with ō becomes the rule, instead of the exception.

Between ō and o̱ lie several sounds, although we cannot now use the expression *between* in the same strict sense as we proposed in the beginning of this section. First, we have ɐ̱, as already explained; next,

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(6.) Phonography, p. 88; 2nd edition.

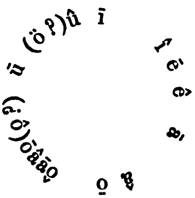
(7.) Dr. Rapp (*Physiologie der Sprache*, vol. 3, p. 174) is of the same opinion. He instances the words "sh*a*re, b*e*ar, th*e*re, sc*a*rce, pr*a*yers, b*i*rth, g*i*rl, *e*arly," the three last he marks as his own personal observation. This will have arisen from his having observed the pronunciation of those persons who in such words endeavour to avoid the vowel ɐ̱. *We* speak these words "bɐ̱rth, gyɐ̱rl (or g'ɐ̱rl), ɐ̱rl*i*;" but we are aware that there are persons who consider this pronnnciation erroneous, while they at the same time deny that the sound is "bêrth, gyêrl (or g′êrl), êrl*i*," and speak of a mysterious intermediate vowel. See Smart, *Pronouncing Dictionary*, Principles, &c., par. 35. We are unable to appreciate the vowel referred to, if such exist.

between ō and ɐ̱, not so broad as ō, is ô, as heard in the Italian r*o*sa, French ch*o*se. This is the Italian *o aperto*, or open o.(8) Between ɐ̱ and o̱ is a sound not quite so guttural as ɐ̱, and more approaching o̱, from which it results in German. This sound is represented in that language by *ö* in G*ö*the, and in French by *eu* in v*eu*ve, m*eu*rtre, &c. This we shall represent by ɐ̬.

Between ū and ī there is a peculiar sound which by most Englishmen is confused with ū, and by the inhabitants of the parts adjacent the Rhine with ī. In German it is represented by *ü* in *ü*ber, in French by *u* in conn*u*. We shall use û as its symbol.

There is also a Swedish sound, of which we can give no account, as we have not heard it. We expect that it cannot differ much from û, and we shall represent it by ö. Dr. Rapp(9) places it between ɐ̬ and û. It probably bears the same relation to û as ɐ̱ does to ɐ̬, and we may, therefore, range it before û.(10)

In order to shew the affinities of the vowel sounds, just pointed out, we should have to arrange them in a circle, thus,



But as, with few exceptions, (arising, probably, from some imperfection in the experiment,) the vowel sounds have been ascertained to correspond to different lengths of an extensible pipe, we shall exhibit this relation

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(8.) We think that we recognize this vowel in the usual pronunciation of the words *froth*, *cross*, *soft*, &c., where frōth, crōss, sōft appears too broad, while the stopped vowel (§ 3) frŏth, crŏss, sŏft, seems too mincing.

(9.) *Physiologie der Sprache*, vol. 1, p. 25.

(10.) Some persons recognize an o̬ distinct from the English o̱, which they term the Italian *o chiuso* (or shut o.) We are unable to detect any difference between this o̬ and our o̱, and have, therefore, passed it over in our scheme. The *é fermé* of the French we believe to be in most cases identical with our ĕ (§ 3), and that in other cases it is used improperly for ē, as in the word *déterminé*=dĕtêrmīnē, the first *é*=ĕ, the second *é*=ē. Prof. Latham, however, distinguishes them, and arranges the vowels thus:—*a*, in *fate;* *é fermé;* *ee*, in *feet;* *ü*, in *übel* (German); *oo*, in *book;* *o chiuso;* *o*, in *note (English Language*, p. 105.) By *oo*, in *book*, we have reason to believe that he means our ū, as, in p. 112, he distinguishes it as the *independent* sound of *ou* in *could*. His sequence would, therefore, in our symbols, be ē, ĕ (or ? ē again), ī, û, ū, o̬, o̱.

most clearly by a linear arrangement, which is also that best adapted for typographical purposes; thus,

ī î ē ê ā â ō ô ȣ̱ ȣ̬ o̱ (o̬?) ū (ö?) û.

These 13 (or 15) vowels (13, if we reject o̬ ö, as not being satisfactorily ascertained to ourselves) fall into the three classes, 𝖎, 𝖆, 𝖚.

𝖎 contains ī î ē ê;
𝖆 „ ā â ō ô ȣ̱ ȣ̬;
𝖚 „ o̱ (o̬?) ū (ö?) û;

and, more conveniently still, into the following seven species:

1, ī î; 2, ē ê; 3, ā â; 4, ō ô; 5, ȣ̱ ȣ̬; 6, o̱ (o̬?); 7, ū (ö?) û.

The first vowels of each species are typical, the others are merely modifications of them. It is to this arrangement that our symbols have been adapted, the seven principal vowels having a small line, while the seven intermediate (including o̬, but excluding ö) have a circumflex, over or under them.

That we may have a better chance of being understood respecting these seven sounds and their modifications, we subjoin, as examples, several words taken from several languages, in which *we* pronounce these vowels. If the reader will pronounce these words, or cause them to be pronounced in his hearing, he will, most probably, approximate very closely to the sensations we ourselves experience on uttering the 13 (11) vowels of our scheme.

Table of Long Vowels.

1. ī English—f*ee*t, b*e*, *ea*ch, conc*ei*ve, p*eo*ple, k*ey*, gr*ie*f, chlor*i*ne.
French—pl*i*s, ou*i*, sc*ie*.
German—fam*i*lie, tr*ie*b, l*ie*be, *ih*nen.
Italian—s*i*, ch*i*, v*i*so, pover*i*no.
Modern Greek—kamaro*ei*dēs, kamēl*i*, *oi*k*ei*akòs, H*ui*òs.
î Russian—v*í*, m*í*, b*í*k.
Polish—podd*y*mac′, w*y*chow*y*wac′.
2. ē English—m*a*te, p*ai*n, pr*ay*, gr*ea*t, v*ei*l, w*eigh*.
French—donn*ée*, n*ée*, goufl*ée*, inn*é*.
German—*e*ben, b*ee*t, h*eh*r.
Italian—cr*e*ta, l*e*ga (from *legare*), t*e*rna (subs.)
ê English—M*a*ry, sw*ea*r, c*a*re, th*e*re, p*ea*r, p*ai*r, pr*ay*er.
French—p*è*re, ch*è*re, *ê*tre, ch*ê*ne, extr*ê*me, f*ai*t, m*ai*s.
German—spr*ä*che, d*e*r, h*e*r.
3. ā English—f*a*ther, b*a*lm, pap*a*, h*ea*rt, *a*rt.

(11.) Only thirteen in this case, as we cannot utter o̬, ö.

French—*é*cl*a*t, p*a*s, fr*a*c*a*s.
German—v*a*ter, tr*a*cht, s*a*gt, *a*hnen.
Italian—desi*a*to, N*a*poli, re*a*le.
â French—ch*â*tir, p*â*te, p*â*le.
4. ō English—*a*ll, b*aw*l, P*au*l, n*o*r, w*a*r. (Swedish, å).
ô English—gl*o*ry, g*o*re, c*oa*rse; cr*o*ft, s*o*ft, cr*o*ss.
Italian—c*o*gli, c*o*lto (from *cogliere*), p*o*sta (sub.); am*ò*.
5. o̱ English—n*o*, b*o*ne, m*oa*n, s*ou*l, d*ough*, sh*ew*, t*oe*.
French—h*au*t, p*eau*, p*ô*t, *eau*.
German—o̱hne, verst*oh*len, thro̱n, b*oh*ne, b*oo*t.
o̬(?) Italian—c*o*gli (preposition and article); c*o*lto (from *colere*); p*o*sta (from *porre*).
6. ɐ̱ English—m*i*rth, s*e*rve, h*e*r, b*i*rd, c*u*rve, y*ea*rn, w*o*rk.(12)
ɐ̬ French—v*eu*ve, m*eu*rtre, fl*eu*r, s*œu*r.
German—G*ö*the, r*ö*hre, sch*ö*n, h*ö*he. über Gönner, König.
7. ū English—st*oo*l, wh*o*, sh*oe*, r*u*le, l*o*se.
French—n*ou*s, tr*ou*, *ou*vrir.
German—sp*u*ren, *u*hr, k*u*r, schn*u*r, b*uh*le.
Italian—ced*u*ta, fut*u*ro, ness*u*no.
ö Swedish. According to Rapp, wherever we should expect ū; in the same way as in French the Latin ū becomes û.
û French—v*û*, conn*ue*, aperç*u*.
German—*ü*ber, dr*ü*sen, s*ü*sz, f*ü*sze.

We have thus given a notation, adapted for common types, to represent all the long vowels with which we are at present acquainted; but it is desirable to have a means of representing sounds which may hereafter occur to us. In this place, only a theoretical notation can be assigned for such; the choice of a practical character must be deferred until wanted. Now we have seen that the list of vowels, just given, form a circle, and, consequently, every other vowel sound must have a place in this circle between some of the principal vowels there given. We may, therefore, take these seven principal vowels as fixed points in the circle of vocal sound from which to measure the others. Let the spaces between each two principal vowels (although these distances are *unequal*, Prof. Willis's tables shewing that ī, ē, ā, are nearer together than ō, o̱, ū) be divided into 10, or 100, or 1,000, &c., parts, 10 will be quite as many as, if not more than, can be accurately appreciated; then, by using decimal fractions, if 1 = ī, 1·1 will be some vowel one-tenth of the

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(12.) As already observed, Smart makes m*i*rth, s*e*rve, and some others possess a vowel intermediate to ĕ and ɐ̱, if such exist.

way from ī towards ē, and 1·2, 1·3, 1·4, 1·5, 1·6, 1·7, 1·8, and 1·9 will give the remainder of the vowels intermediate to ī and ē, and by this means 70, or 700, or 7,000, or &c. vowels may be readily and accurately represented.

This method of symbolisation is, therefore, very delicate; almost too much so for practical purposes. To give an example of its application we will endeavour to fix what may be termed the *peripheral*(13) value of the intermediate with respect to the principal vowels.

ī=1, î=1·7; ē=2, ê=2·4; ā=3, â=3·7; ō=4, ô=4·4; o̱=5, o̬=?;
ɐ̱=6, ɐ̬=6·5; ū=7, ö=?, û=7·8.(14)

The whole circumference being divided into seven portions only by the seven principal vowels, 7·9 must be followed by 1.

The vowel ō is the broadest, and is, therefore, placed at the bottom of our circle in p. 50; ī, the narrowest, is placed at the top; from ī to ō, or 1 to 4, the vowels broaden, while from ō to û, or 4 to 7·8, and thence to 7·9 and 1, they gradually become thinner. Hence, the greater the peripheral value the broader the vowel, as far as 4, and after 4 the thinner will be the vowel. This must be borne carefully in mind, or we shall be apt to consider the larger number as always representing the broader vowel.

SECTION 2.—*On the Short Vowels.*

THE vowels mentioned in the last section may all, with a little care and attention on the part of the speaker, be prolonged for any required period of time,(1) and may be also pronounced with great rapidity, but in this case their character becomes altered in a remarkable degree, which we should have hardly expected. Although the alteration is simply in the duration of utterance, and in no respect in the method of forming the vowel itself, yet the distinction is so marked that no speaker even in the most rapid discourse, will confuse the long vowels, as we term those of the last section, with the *short* vowel which we are now considering. The short vowel sound, however, is so flitting that one short vowel is often confounded with another, and all have more or less a tendency to become

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(13.) From περὶ (pĕri), *about*, and φέρω (fĕro,) *I carry*, comes περιφορὴ (pĕrif·ori, or perifori·, in M. G.), *something carried about*, which is translated accurately by the word *circumference* (*circum*, about, *fero*, I carry.) The *peripheral* value is, therefore, that reckoned on the *circle* of vocal sound, given above.

(14.) The circular arrangement of the vowels, above given, displays these intervals approximatively.

(1.) The greatest care will be required by Englishmen for the vowels ē and o̱, to prevent them falling into ī and ū, when prolonged.

the short vowel sound of the fifth or natural vowel; this is particularly marked in the English language, where the short sound of u̱ almost always replaces that of ē and ā.

Take the word *philosophy*; the first, third, and fourth vowels are all short, as the word is generally pronounced, and if we were to attempt to lengthen them we should produce the effect of the French word *philosophie*,(2) which only differs from the former in the length of its vowels and the spoken substitution of z for s. The syllables of the English word must be divided thus, phi-los-o-phy, and not phil-os-o-phy, as both Smart and Knowles divide them. The first three letters express neither *feel* nor *fill;* the vowel in this last word belonging to the class considered in the next section.

We shall express these short vowels by *italic* letters (with the exception of ə) as less *bold* than the Roman types, and, therefore, more adapted to express a flitting sound. The following table will serve to explain the particulars of this notation, and at the same time to exhibit the peculiar nature of the short vowel properly so called. The numbers and order correspond to the list of long vowels given in the last section.

Table of Short Vowels.

1. *i* English—ph*i*losoph*y*, carr*y*, Ital*y*, prim*i*tive, just*i*fy, magn*i*fy, sens*i*ble, v*i*tal*i*t*y*, d*i*mension, fug*i*tive.
German—gesell*i*gen, heíl*i*gen.
ɩ Polish—Pomoc*y*, Czartorisk*y*.
2. *e* English—Sund*ay*, Mond*ay*, &c., pianofort*e*.(3)
Italian—corr*e*, venn*e*, v*e*nit*e*, foss*e*ro.
German—geb*e*, stöck*e*, &c., (according to Rapp 1, 160.)
é English—contr*a*ry, supernumer*a*ry, &c.(4)
3. *a* Italian—ide*a*, veng*a*, concordanz*a*.(5)
á ?

(2.) The French say fĭl·ŏzo̱fī, with the accent upon the first syllable, the two last vowels being still long. The English say *fi*lŏs·*ofi*, the accent being on the second syllable, and the vowels in the other syllables being *short*. The remaining vowels are *stopped* (see next Sect.) Observe that, in *philosophy*, the *time* employed in uttering the word may be as long as we please, for we may *pause* between the syllables; but we shall still keep the vowels *short*, and not lengthen *them*, instead of pausing, in order to produce the emphatic effect. We shall say *fi*—lŏs·—*o*—*fi*, *not* fīlŏso̱fī, though the hiss of the s will be probably much exaggerated.

(3.) Thus arranged, the word is English; *forte piano* is the foreign collocation.

(4.) We believe that the vowel in such words is *most generally* ə, though theory is in favour of *é*.

(5.) This sound does not occur in English, ə being invariably substituted for it.

4. ō English—reformation, fortuitous, *au*gust, *au*thority *(rare.)*
ó ?
5. ə English—abl*e*, off*er*, burd*en*, ide*a*, M*a*ri*a*, *a*bove, plac*a*bl*e*, schis-m, rhyth-m (the vowel is not written in these two words, but is heard preceding m), c*a*nary, p*a*pa.
French—l*e*, j*e*, f*e*rais, l*e*çon, honnêt*e*ment.
German—stöck*e*,(6) leb*en*, g*e*lebt, wass*er*, es*el*, üb*el*, g*e*wonn*enen*.
𝓅 ?
6. *o* English—philos*o*phy, fell*ow*, r*o*tation.
Italian—lor*o*, luog*o*, sol*o*, temp*o*.
℘ ?
7. *u* Italian—*u*sarono, pl*u*rale.
English—cuck*oo*, whirlp*oo*l (*rare* in our language).
ú ?

The mark of interrogation indicates that no example occurs to us of the use of the corresponding short vowel. The sign ə (for 5) differs in character from the others, because its sound differs in many respects from the others in its nature. It is the simplest enunciation of the voice which it is possible to execute, and it is almost the only short vowel which occurs before a consonant in the same syllable.

After pronouncing the words in the above tables, the reader will have acquired a tolerably accurate notion of the nature of short vowels and of the mode in which they differ from long vowels, which is merely in the time of utterance. It is important, however, that he should not confuse the short with the unaccented long vowels. The distinction and connection between accent and quantity will form the subject of a subsequent chapter, at present it will be sufficient to give a few words in which long sounds occur in unaccented syllables, because if long sounds can exist in such places, it is clear that the want of accent is not a reason why any vowel is short. The following words serve to exhibit this fact :—

1. ī Whitef*ee*t, Purfl*ee*t,(7) Northfl*ee*t,(7) rosetr*ee* ;
2. ē Whiteb*ai*t, scapegr*a*ce, hair-sp*a*ce, expati*a*te, magn*a*te ;
3. ā Court-c*a*rd, jack*a*ss ;
4. ō Jackd*aw*, lockj*aw* ;
5. ɐ̱ Bullw*o*rk ;

(6.) In some parts of Germany, *e* is pronounced, instead of ə, in such cases. Rapp (*Physiologie*, 1, 160) says, "the German does not use the original vowel (ə) in pronouncing his final e's, but utters them with a pure vocal *é''*=*e*. This, however, runs counter to our own observations in Dresden.

(7.) Names of places.

6. o̱ Stokeh*o*le, punch-b*o*wl, lamp-p*o*st, steam-c*oa*ch, alm*o*st;
7. ū Chain-r*u*le, bread-fr*ui*t;

These examples, although not numerous,(8) are abundantly sufficient to prove that the unaccentented vowel may be long, although in such cases English grammarians, as if for the sake of evading this conclusion, recognize what they term a *secondary* accent.(8) It is, therefore, necessary in a complete alphabet to have some means of distinguishing long from short vowels, whether the one we have adopted or any other.

According to the usual mode of speaking English, the vowel *i* is pronounced at the termination of syllables more like the Polish ı, than the short vowel which accurately corresponds to the long vowel ı. To this circumstance we have had already more than once to call the attention of our readers. Again, it is the opinion of many writers that ɐ̱ is *not* precisely the long vowel which corresponds to ə. Rapp, who calls ə the "original vowel" *(Urlaut)*, says (1, 21), "It must be carefully observed that this sound, on account of its undeveloped state, can only make its appearance as a short vowel, for whenever we endeavour to prolong it, convenience would necessitate its being utterred with a slight leaning to one side or the other, although, if the speaker has a good share of theoretical perseverance, he will be able to prolong it." Accordingly, he makes ə quite distinct from ɐ̱, which, to our ears, is the real prolongation of that sound. In order to perceive this, it will be necessary for the reader to entirely dissociate ɐ̱ from r, in conjunction with which consonant only is ɐ̱ found, long and unaccented, in our language. This dissociation might be accomplished by learning to trill the r very distinctly, and then taking such a word as cur=kɐ̱r, and say kɐ̱ . . . r, prolonging the ɐ̱ for sometime before the trill is allowed to follow.

It is the idea of most grammarians that the short vowel is the original one from which the long vowel is formed by reduplication.(9) Had they

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(8.) Many others might be furnished by the French language, the regular rule for the accentuation of French dissyllables being to place the accent on the penultim, the last syllable being long but unaccented. (On the accentuation of the French language, see Rapp, *Physiologie*, vol. 3, 124-132.) Many German words are accented in the same manner, thus, arbeit=ār·bait; elend=ē·lend, &c.

(8 *b.)* We do not intend to deny the existence of secondary accents altogether, and shall recur to the subject in a subsequent chapter.

(9.) "The short vowel claims the precedence of the long; it is the simple, original element, and the idea of any long vowel presumes that of short ones, which produce it. The short vowel is the first power, the long the second. If the complete (short) vowel=1, the long vowel would be=1+1=2." GRIMM, *Deutsche Grammatik*, 3d edit., vol. 1, p. 32. Now it is true that the sound cannot exist and be prolonged without passing through all the degrees of shortness of duration, and in this sense it may asserted that the long vowel is merely a prolonged pronunciation of the short one, it would not have been easy to raise an objection to the definition; we could only have observed, on the other hand, that it appears more natural to us to consider the sound at first, without any reference to a particular duration, *i. e.*, as capable of infinite prolongation, or as a long vowel, and then to turn to the effect of limiting that duration to, perhaps, the greatest possible extent. But the idea of reduplication implies that of a double effort, of which we are unconscious in pronouncing ī (for example). In order that the short vowel should produce its effect upon the ear, it is necessary that it should be pronounced in a very short period of time, which cannot be very precisely estimated, but which, for the sake of fixing our ideas, we will call $\frac{1}{20}$ of a second of time. Then *two* short vowels would be pronounced in $\frac{1}{10}$ of a second, or rather more; allowing for the time lost between the cessation of the first vowel, and the commencement of the second effort. This, then, would be the length of the long vowel, which it could not much transgress without losing its character as much as *i* loses *its* character when prolonged. Now it is notorious that the long vowel may be prolonged indefinitely, and, consequently, any definition which tends to give them a determinate length must be faulty. These grammarians would represent the short vowels by certain marks, and the long vowels by repeating these marks, thus: a, aa; or by placing a mark of contraction over the vowel sign, thus: a, â. As we cannot agree with this theory ourselves, we have used a different notation. The error, as we believe it to be, which we have pointed out, is not one entertained by one or two writers only, but seems to be a nearly universal opinion.

Rapp (1, 152) evades the difficulty thus: "If we utter a vowel sound as briefly as the organs of speech will conveniently admit, the result is called a *short vowel*, and its brevity must henceforth be taken as the unit of length in the scale of quantitative measurement. This is certainly no mathematical or absolute measure; it is undeniable that dialects and languages, nay (since it is a relation entirely founded upon the organs of speech), that *individuals* may differ considerably in the length of this unit; this vocal brevity may be much shorter for one than it is for another. * * * Conceive the brevity to be doubled, and you have the idea of the long vowel. * * Whether this idea of length is absolute in its relation

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be said that the long vowel presupposes the existence of the short one; but it appears to us to belong to the littleness of school-philosophy to fix the proportion of the duration of the long to that of the short vowel with such accuracy, aping even mathematical symbols, as Grimm has done in the passage just cited.

to the brevity [? always bears the same relation to that of brevity] is undecided, that is, we cannot say with certainty that every organ will require exactly twice its unit of brevity in order to produce its unit of length. Perhaps the brevity may be repeated once and a half or twice and a half in different persons. We lay all these doubts on one side and say, theoretical vocal length is equal to two vocal brevities." We must own that, mathematically, we are little pleased with the introduction of a unit of *brevity* as well as unit of length, which seems to encourage the idea of absolute brevity; but putting this aside, we see that Rapp does not contend for *two efforts* in the generation of the long vowel, but merely required that the voice should be prolonged for *about* twice the length of time during which a short vowel is heard. The proportion of long : short = 2 : 1, must be regarded as *merely theoretical.* In common utterance no vowel is retained for any great length of time; perhaps in rapid conversation this proportion may hold, but in sustained delivery or oratory, it would be exceedingly variable, altering from a ratio of nearly equality, 1 : 1 or 1¼ : 1, to as much as 6 : 1 or 10 : 1. The short vowel will remain of a much more uniform length in all cases.

The two classes of vowels which we have now been considering have one quality in common, which must be particularly noticed, as it serves to distinguish them from the class explained in the next section; it is this: *they can be pronounced either* WITH *or* WITHOUT *a succeeding consonant.* Only one short vowel is of frequent occurrence in such positions that it must unavoidably be taken in conjunction with the following consonant; it is ə. Many writers on the subject of phonetics declare that *no* vowel is heard in the final syllables of such words as *able, burden, schism.* This opinion we believe to be founded upon a misconception which will be cleared up by a consideration of the final syllables of English *table* and the French *table*, the former being tēbəl, and the latter nearly tāblə, adopting the notation already explained. Rapp, indeed, says (1,160) that the German *fabel* (in which the last syllable is equivalent to that in the English *fable)* is only separated in imagination or an affected pronunciation from the French *fable;* but to us the distinction is so real that we are almost able to make such a word the test of a correct French pronunciation, and recollect being forcibly struck by the essential difference between the English and French pronunciation of these syllables while in Paris and studying the language. We shall recur to the theory of these syllables in chap. 9, suffice it at present to remark that the writers of pronouncing dictionaries are by no means consistent upon this point, even with themselves,—we hardly ever find them agreeing on all points with one another. To our mind there is no doubt that the vowel in the last syllable of *after* is identical with that in those of *able*, *burden*, *schism*, *mental*, *physical*. Now *flower* is by Knowles marked flauɐ̭r,(10) by Smart flauər, (which we believe correct). *Finical*=fĭn·ĭkăl K. =fĭn·*i*kəl S. (with whom we again agree); *pinnacle*=pĭn·ăkl K. =pĭn·əkl S. Now, we would ask, ? what is the difference in sound between the final syllables in *pinnacle* and *finical* that both Knowles and Smart should adopt a different mode of representing that of the first from that of the second word, while they differ from one another in the representation of the final syllable of the second. We should write fĭn·*i*kəl, pĭn·əkəl. Similar remarks apply to *icicle*, *cynical*, and other words ending in *cle* or *cal*. Again, according to Knowles, *evil*=ī·vl; *evilly*=ī·vĭlī; but it is evident that the second syllable in the second word is identical with that in the first. We would write īvəl, īvə*li*. Again, *burden*=bɐ̭r-dĕn K. =bɐ̱rdn S. =bɐ̱rdən according to us. *Schism*=sĭzm K. and S., we write sĭzəm, for the word is clearly dissyllable.(11) Some general rule is required to meet these cases, for none has as yet been given by these authors who claim our notice (Knowles in especial(12)) by their pretensions to correctness. These syllables have generally arisen from the omission of some vowel from the original word. Thus, confining ourselves to

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(10.) We are necessarily obliged to anticipate some of our notation, into which we have *translated* those of Knowles and Smart; au expresses the sound in *cow;* ɐ̭ that in curry, (which evidently differs from ɐ̱, that in cur,) and ə, the short sound of ɐ̱.

(11.) In Mr. Lane's works I find *el-Musr* as the Arabic name for Egypt or Cairo, now in *literary* Arabic the word is almŭçru; but in spoken Arabic the flexional u is discarded. This is similar to *rhythm*, *schism*, in English, the flexional *os* and *a* (Greek ῥυθμος σχισμα) being rejected. In French the mute e has supplied the place, *rhythme*, *schisme*. Now the English say rĭthəm, sĭzəm; the French rĭtmə, sĭsmə, or more generally, rĭtm, sĭsm. ? Do the Arabs say ĕlmŭçrə or ĕlmŭçər. The ambiguity of this notation may be well exemplified by the fact that we have as yet been unable to discover what pronunciation is intended.

(12.) In his title page he states that his work is "founded on a *correct* development of the nature, the number, and the various properties of all the simple and compound sounds (in English) as combined into syllables and words," and at the conclusion of his "exposition of the principles of speech" he says, "having closed my observations on the vowel, consonant, and diphthong sounds of the language, *I challenge the closest, the severest criticism to discover a single error*, except a casual, typographical one, in my developement of the simple and compound elements of speech." There *is* a typographical error of some importance, (in p. 7, vol. 2, line 21,) because it occasions *i* in *ivy* to be considered identical with *oy* in *boy*, and thus the important point, the composition of the diphthong *i* is lost. A knowledge of the variety of opinion on the subject of Phonetics should have taught Mr. Knowles to have been more moderate in his language. Among the vowel elements, he ignores ɐ̱ and ə, confusing ɐ̱ with ɐ̭; and a great many errors, as they appear to us, might be pointed out in his dictionary.

le, *i* has been omitted in *edible* from *edibilis*, and in *stable* from *stabilis*, but *u* in *stable* from *stabulum*, and *table* from *tabula*. *Animalcule* is a modern example of the retention of *u;* according to the analogy of our language, as *particula* gives *particle*, *animalcula* should have produced *animalcle*. When the vowel preceding *l* is *a*, it is usually retained in English, as *original* from *originalis*. *Principle* and *principal* are only different forms of the same word, for it would be curious to derive *principle* from *principium* and *principal* from *principalis*. We see no valid reason for this favour being shewn to *a* over *i* and *u*, but think that *cynicle*, *physicle*, *animle*, would be fully as correct as *able*, *oracle*, *table*. If an objection be raised on the score of the termination *ality*, we reply that the same inconsistency which would appear in *finle*, *finality*, actually does appear in *able*, *ability; oracle*, *oracular; table*, *tabular;* which occasion no offence. And as regards the orthography *schism*, *rhythm*, which Knowles and Smart extend (in their examples of pronunciation) to *princip l*, *abl*, *burdn*, &c., and which, if adopted at all, should extend to *offr*, *animl*, *cynicl*, *chapmn*, &c.; that is, the orthography founded upon a theory of a *vocal* or *syllabic* power inherent in *l*, *r*, *m*, *n*, we have only to state that we have made the experiment and find that it would lead to great errors(13) *unless additional letters were used for these new vocal elements*(14) a course which does not appear advisable.

The characteristic of long and short vowels, may, to return from our digression, be stated to be that *they admit of being pronounced independently of any succeeding consonant.*(15) We shall express this by calling them *full vowels*, that is, vowels which do not require any shifting of the parts of the mouth in order to their production, and therefore *have* or *admit of receiving* their *full sound*, being *long* in the first case and *short* in the second. The reason for insisting on this distinction will appear in the next section.

(13.) From ĭvl *(evil)* would come īvl*i* *(evilly)*, and a syllable might be lost; from fainl, fainl*i* *(final, finally)*, the same as from fain *(fine);* from ŏfr, ŏfriɴ *(offer, offering)*, in which a syllable is lost; ăn*i*ml would make ăn*i*mlĭzm (*animal, animalism);* sĭstm, sĭstmătĭk *(system, systematic);* dzhe̱rmn, dzhe̱rmnĭzm *(German, Germanism);* and so on. If we adopted *l*, *r*, *m*, *n*, in italics, as representatives of the syllables, which in the text we prefer representing by əl, ər, əm, ən, then the above words might be correctly written, īv*l*, īv*l*l*i*, fain*l*, fain*l*l*i*, ŏf*r*, ŏf*r*iɴ, ăn*i*m*l*, ăn*i*m*l*ĭz*m*, sĭst*m*, sĭst*m*ătĭk, dzhe̱rm*n*, dzhe̱rm*n*ĭz*m*; we much prefer to write īvəl, īvəl*i*, fainəl, fainəl*i*, ŏfər, ŏfərĭɴ, ăn*i*məl, ăn*i*məlĭzəm, sĭstəm, sĭstəmătĭk, dzhe̱rmən, dzhe̱rmənĭzəm.

(14.) In Sanscrit, there are vocal elements usually esteemed to be equal to r*i*, rī, lr*i*, lrī.

(15.) Hence Prof. Latham calls them "independent vowels," and Prof. Lee

SECTION 3.—*On the Stopped Vowels.*

We have next to consider that modification which the action of the consonant produces in the vowel. Now in order to utter a consonant we must close, or almost close, the mouth in a particular manner, and in order to produce the vowel we must open the mouth more or less widely, in a particular manner, so that it is clear that *the direction of action* (so to speak) of the consonant or the vowel will differ in each individual case, since either the starting point or the goal will be different. There may, therefore, be affirmed to be as many species of each consonant as there are different vowels to which it may be applied. A single character will, however, be sufficient to represent the consonant, because the difference is organically produced, depending upon the effort made to pass from one duly represented position of the organs of speech to another. In the same manner there are really as many different kinds of each vowel as there are different consonants, but there is no need of inventing special symbols for each different kind, because their origin is, as in the former case, organic. There is no more necessity for marking them than there would be to tell a person who is under the necessity of passing in the shortest possible manner from a point A, to another B, that he must take care to pass through every point lying in the straight line which joins A and B, as it is impossible that he should do otherwise.

The effect of *pressing* the consonant upon the vowel, if we may use the expression, will be best appreciated by performing an analysis similar to the following.

1. Compare the words "s*ea*t, b*ea*d, sl*ee*p, s*ee*k, l*ea*ve, s*ee*r." We have here the same vowel(1) in each case succeeded by a different consonant in each case, to which alone is to be attributed the apparent difference of sound, which is most remarkable in the last word "s*ee*r."(2)

2. On comparing the words "sea*t*, a*t*e, ough*t*, no*t*e" we shall in the same way recognize the same consonant at the termination of each word, preceded in each instance by a different vowel; the pure vowel sound being of course differently modified in each individual case.

3. On comparing "s*i*t, b*i*d, sl*i*p, s*i*ck, l*i*ve," we perceive that each

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"perfect vowels," and those vowels which do *not* admit of being pronounced without a subsequent consonant, are termed "dependent" by the first, and "imperfect" by the second. We prefer the terms *full* and *stopped*, as being monosyllables, and entirely differing from one another, so that their sounds are not so likely to be confounded, as we found, on trial, was too frequently the case with *independent* and *dependent*, which we, for some time, endeavoured to employ, but without success.

(1.) We refer, of course, to the *sound*, not the *orthography*.

(2.) If, indeed, "seer," be not compound, and = siər. See Chap. 6, § 3.

word begins and ends with the same consonants respectively, as those in (1), and that the vowel sound, although different from that in (1), is the same in each example here given. If we attempt to separate the vowel from its consonant, we shall find our attempt fruitless; the nearest approach we can make to a separate pronunciation being to utter a sound something like û (or î).(3) This has been observed by Dr. Young,(4) who says, "when *lip* is lengthened in singing, it does not become *leap*." This vowel, then, is not the *same* as *i*, which, upon prolongation, becomes ī; yet, if we tell a Frenchman to pronounce *lip*, he will, most probably, say *leap*.(5) There must, then, be a connection, and that a very essential one, between ī and this vowel, which we will call ĭ. Let us examine the position of the mouth in pronouncing *it*. We find that it commences the same as *eat*, but that the vowel sound is *stopped* short, in the very act of its being produced, by the immediately succeeding consonant, which comes suddenly upon it. We are induced to consider this *stoppage* as the true characteristic of this sound, and shall consequently term it a "*stopped vowel*." Klopstock(6) uses the expression "*abgebrochen*," i. e., "*broken off*," which amounts nearly to the same thing.

(3.) Query: ? May it not exactly be the sound we have represented by ŏ.

(4.) *A Course of Lectures on Natural Philosophy*, 4to, Vol. 2, p. 277.

(5.) This is the more singular that the sound ĭ is common enough in French, as ici, imiter=ĭsī, ĭmītē.

(6.) *Ueber die deutsche Rechtschreibung* (On German Orthography). Complete works, Leipzig, 1830, vol. 14, p. 149. In this place he gives a list of the German vowels, which it will be useful to have here in order to compare with our tables. It should be observed that there the only real difference between his "open" and "prolonged tones," is that in the second case the long vowel is more distinctly modified by the succeeding consonant, because it is taken in necessary connection with it; we have added our symbols to the "prolonged and broken tones" inclosed in square brackets:

OPEN TONE.	PROLONGED TONE.		BROKEN TONE.	
(A vowel ends the syllable.)	*(A consonant ends the syllable.)*		*(A consonant ends the syllable.)*	
Kah-ne	Kahn	[ā]	Kann	[à]
Leh-re	Leer	[ē]	West	[ĕ]
Aeh-re	Bär	[ê]	"Has none"	
Röh-re	Schön	[ɤ]	gönnte	[ɤ]
Flie-sen	Fliesz-en	[ī]	beflis-sen	[ĭ]
Drü-sen	Süsz	[û]	müs-sen	[ù]
Thro-ne	Thron	[o̱]	konnte	[ŏ, or ǫ]
Spu-ren	Uhr	[ū]	murrten	[ŭ]

"There are also *half* prolongations," which correspond to our short vowels. It should be observed that ǫ is in some parts of Germany pronounced for ŏ in *konnte* and other words; that Rapp recognizes a stopped ê which he makes the same as our ĕ, substituting another sound (symbolized in his work by *é*) for the stopped ē. And, as it will be seen, we make ă the stopped sound of ā, reserving à for â.

4. If we compare "*pit, pet, pat, pot, put* (substantive), *put* (verb)," we shall find that they all contain the same consonants, but have each a different vowel, and each vowel is *stopped*—a fact which we may determine by endeavouring to prolong any one of them, and failing of doing so. It is this impossibility of separating the vowel from its consonant which has rendered the preceding analysis necessary. The stopped vowel is like a chemical substance, the existence of which we can feel and demonstrate, but which cannot be exhibited except in conjunction with some other substance. Thus the foregoing experiments have proved the existence of vowel sounds in conjunction with consonants, essentially differing from the vowel sounds previously considered, and have shewn that their appearance does not depend upon any particular consonant, because the same vowel may be produced before different consonants, and different vowels before the same consonant. Hence although we cannot exhibit the stopped vowel except in conjunction with a consonant, we have, as we think, satisfactorily shewn its necessarily independent existence.

What is the exact relation between the full and stopped vowels, it is not very easy to state; the feeling of different persons on this point differs considerably, and there does not appear to be any objective standard to which we can refer.(7) In the following table we give the long, short, and

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(7.) Some writers assert that three of our stopped vowels (those marked ĭ, ĕ, ŭ̥) have no corresponding long vowel whatever, but are vowels incapable of fulness—i. e., of being pronounced independently of a following consonant. Mr. Knowles only allows of nine distinct and separate vowels in our language, corresponding to our ọ̄, ā, ē, ī, o̱, ū, ĕ, ĭ, ŭ̥, admitting ŏ, ă, ŭ, not as distinct vowels, but as the short (stopped) sounds of ō, ā, ū, (foreigners would probably disagree with him as to ă, at any rate, without further explanation), and his scheme is, therefore, peculiar in leaving ē, ī, o̱ without corresponding stopped, and ĕ, ĭ, ŭ̥ without corresponding long vowels; whereas, in our opinion, o̱ is the only vowel which does not occur in a double (or rather triple) form in our language. The following is the description Mr. Knowles gives of the pronunciation of ĕ, ĭ, ŭ̥ (*Exposition of the Principles of Speech*, p. 6, col. 2, prefixed to his Pronouncing Dictionary; we have, as usual, *translated* his notation):—"In uttering the sounds ĕ, ĭ, ŭ̥, he (a teacher, or critic, who looks into a child's mouth while it is repeating these sounds deliberately, or places himself before a magnifying glass and looks into his own mouth) will perceive that the sound, represented by ĕ, is produced by a movement of the larynx and glottis, which throws out a short and quick percussion of the voice upon the tongue and palate, which (? the tongue) is directed towards the front of the mouth; that the extremity of the tongue is pointed strongly down to the lower palate, or gums; that it is considerably raised in the mouth, but not drawn back; that it rises towards the back part, so as to receive the impulse of the voice, and throw it forward as I have said. In uttering the sound represented by ĭ, he will perceive that the position of the tongue is the same as in the former sound; but that the tongue raises itself more and throws the sound to the roof of the mouth. In uttering the sound represented by ŭ̥, he will perceive that the stopped vowels in three columns, endeavouring as far as possible to give such examples as contain the three kinds of vowel in conjunction with the same consonant, in order that the reader may be better able to compare the several sounds together and thereby form his own conclusions. We have, however, of course adopted our own arrangement as the basis of our notation, which is shewn in the three last columns of the table, corresponding respectively with the three first.

Combined Table of Long, Short, and Stopped Vowels.

	FULL.		STOPPED.		FULL.		STOPPED.
	Long.	*Short.*	*Short.*		*Long.*	*Short.*	*Short.*
1.	n*ea*t	sign*i*fy	kn*i*t	1.	ī	*i*	ĭ
	podd*y*mac′ (pl.)(8)	pomoc*y* (pl.)	Towarsz*y*stwo (pl.)		î	*í*	ì
2.	d*ȧ*te	Sund*ay*	d*e*bt	2.	ē	*e*	ĕ
	ch*e*ne(9) (fr.)	—(10)	b*e*n(9) (it.)		ê	*é*	è
3.	ps*a*lm(11)	mess*a* (it.)	S*a*m	3.	ā	*a*	ă
	p*á*te (fr.)	—	p*a*tte (fr.)		â	*á*	à
4.	c*au*ght	*au*gúst	c*o*t	4.	ō	*ǭ*	ŏ
	torn*ò* (it.)	—	vu*o*l (it.)		ô	*ó*	ò
5.	c*u*r	knock*e*r	c*u*rry	5.	ɐ̱	ə	ɐ̮
	h*ö*ken (ger.)	—	b*ö*cke (ger.)		ɐ̬	*p*	ɐ̖
6.(12)	b*o*ne	limb*o*	b*o*nne	6.	o̱	*o*	o̭
7.	f*oo*l	*u*sarono (it.)	f*u*ll	7.	ū	*u*	ŭ
	k*ü*hnste (ger.)	—	k*ü*nste (ger.)		û	*ú*	ù

We will now examine these vowels in order. First, ĭ is considered by almost every writer to be the corresponding stopped vowel to ī. Mr. Knowles, as we have seen (Note 7), holds it to be an independent sound,

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end or point of the tongue is looser in the mouth than it was in the former sounds, and drawn a little further back from the lower gums, though it rests upon the lower palate; that it is drawn back so much as to leave a considerable space between it and the palate; and that, by a strong movement, it raises the back part of it up, so as to throw the voice against the extreme back part and sides of the palate."

(8.) All words are English, except otherwise specified. The names of languages are, in this table, contracted thus: pl. Polish, fr. French, it. Italian, ger. German.

(9.) We think that these sounds occur in the English words "f*ai*ry, f*e*rry."

(10.) When a space is left in this manner, it shews that we are not acquainted with any word exemplifying the sound, which sound is, nevertheless, perfectly conceivable.

(11.) This belongs to a class of words (balm, calm, palm, &c.) which some persons pronounce with à, but which we pronounce (as most persons that we have heard speak English do) with the same vowel as *a* in f*a*ther.

(12.) If ǫ be recognized as distinct from o̱, its three signs will be ǫ, *ǫ*, ǫ̭.

having no connection with ī; and Dr. Young, in the passage lately quoted, seems to agree with him. Our own observations, added to the testimony of several eminent phoneticians,(13) lead us to pronounce unhesitatingly that ĭ is the stopped sound of ī.

Concerning ì we cannot feel very sure, as we have had but very slender opportunities of receiving instruction in Polish pronunciation; to our ears it partakes much of the nature of ĕ.

According to Rapp,(14) our word "debt" has the vowel è and not ĕ; in this case we are unable to conceive what sound he attributes to ĕ (in his notation *é)*, but the difference appears to be so essential, that he invariably distinguishes the two cases, and even grounds some distinctions in German dialectic pronunciations upon them. *We* seem to hear a broader sound in the Italian "b*e*n," which, we believe, contains the true è. Latham says that he has convinced himself that *e* in *bed*, "although both broad and slender, is incapable of becoming independent" (*i. e.*, full).(15) As, in our opinion, ê occurs before r in such words as f*ai*ry=fêr*i*, it would appear that è must be the vowel in f*e*rry=fèr*i*; but of this we are yet uncertain.

Great doubts may be entertained concerning the propriety of classing ă with ā. Rapp makes it, in his scheme of English vowels,(16) correspond with our ê. The sound is peculiar to the English language, in which it replaces the foreign à. As ā is less broad than â, so we have thought it best to place the slender ă to ā, and leave the comparatively broad à to â. Foreigners are apt to confuse ă either with à or è.

The vowel à is not generally recognised as existing in our language, but some theorists require it in such words as *after*, *ask*, *laugh*, *aunt*, *path*, *balm*, &c., and generally before the continuous sibilants, writing such words—àftər, àsk, làf, ànt, pàth, bàm, &c. They certainly approach this sound much more nearly than that of ă, as ăftər, ăsk, ănt, păth, which some other theorists propose, and which is common among the upper classes in Yorkshire. If we had only to choose between the vowel characters, ā and ă, we should certainly select the former as the representative of this sound, in preference to the latter, although ā is by some considered broad and vulgar; and Judge Haliburton, by writing "larf" for

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(13.) Latham, *On the English Language*, p. 112; Rapp, *Physiologie der Sprache*, vol. 3, pp. 164, 174; Bp. Wilkins, *Essay on a Real Character*, p. 363; to whom might be added many others.

(14.) *Phys. d. Spr.*, v. 3, p. 174, compared with vol. 1, p. 23. Klopstock makes ĕ the stopped sound of ē, and does not admit of any stopped value of ê; see suprà, p. 62, note 6.

(15.) *Engl. Lang.*, p. 112.

(16.) *Phys. d. Spr.*, v. 3, p. 174.

"laugh," in his *Sam Slick's* conversation, clearly wishes to point out the pronunciation "lāf" in contradistinction either to làf or lăf. Theoretically, ă̄ occurs before an r which is not followed by a vowel; but, practically, its place is always usurped by ā, at any rate in our language.

There cannot be much doubt as to the correspondence of ŏ with ō; but it is curious that while ŏ is of general occurrence, ō is only found, as a recognized sound, in English and Swedish. This ŏ is, in most languages, used as the stopped vowel of o̱, with which it has no real connection. The Italian ò does not differ much from it, being only somewhat broader. We have before stated (§ 1) that, to us, many persons appear to pronounce *croft*, *loft*, *cross*, &c., as crôft, lôft, crôs; at times, however, this sound (which is very uncertain in the mouths of English persons) seems rather to approach the stopped sound cròft, lòft, cròs. For practical purposes, the full vowel, crōft, lōft, crōs, appears to be the best notation.

Among all European languages, the English is peculiar in possessing a stopped sound of ə, namely, ɐ̭. Foreigners are continually confounding it with ŏ, or, more properly, o̭, to which it bears a strong resemblance. The difference between ɐ̭ and o̭ may be well felt from hearing a foreigner's mispronunciation of some such word as *bun*, for which he will almost invariably (at any rate, during his first trials) say bo̭n, instead of bɐ̭n.(17) It is important that readers should learn to distinguish with accuracy between ɐ̭ and ɐ̱, for, strange to say, most orthoëpists have confounded them. Knowles, for example, marks *cur* to be pronounced with the vowel in *but*, and *curry* to have the same vowel in its first syllable. Dr. Orpen says that ɐ̭ is always short (stopped) in English; and Bishop Wilkins states the same. Such words as *cur*, *curry*, *occur*, *occurrence*=kɐ̱r, kɐ̭ri, ŏkɐ̱r, ŏkɐ̭rəns, should, however, have led them to a different conclusion; they should have shown them that the long effect in such words as *cur*, was *not* entirely due to the disturbing action of the following r, as the same long effect is not produced in *curry*, where r also follows. The only doubt that can be raised is, as we mentioned in the last section, as to whether ɐ̱ is the pure long vowel corresponding *phonetically* (as it does

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(17.) We find M. Volney making this error (*L' Alfabet Européen*, p. 33; *Phonotypic Journal*, vol. 3, p. 110). He gives, as examples of "clair ou bref, petit o" (clear or short, little o), in French, *o*dorat, h*o*tte (d'osier), m*o*lle (cire), s*o*l; in English, r*o*d, g*u*t, n*u*t, c*u*t, l*u*ll; in German, *o*chs, *o*ft; which words we believe to be pronounced respectively, ŏ̄do̱rā, ʜo̭t, mo̭l, sŏ̄l, rŏ̄d, gɐ̭t, nɐ̭t, kɐ̭t, lɐ̭l, ŏ̄ks, ŏ̄ft. But this is not the only instance of M. Volney's defective ear, for, just above, he confuses ă̄ with à, and ȧ with ō. It should be observed that, in the first five editions of Mr. Pitman's Phonography, ɐ̭ was considered as the stopped sound of o̱, or as identical with o̭; this error has been corrected in the 6th edition.

practically) with the stopped vowel g̭ and the short vowel ə, which two undoubtedly belong to one another.

The stopped sound g̨ does not differ much from g̭, and is, perhaps, the nearest approach to this sound which the generality of Germans are able to effect.

The stopped sound o̭ does not occur in English—at any rate, according to the recognized pronunciation; but we have thought that we sometimes heard the word *wholly* pronounced ʜo̭l*i*, instead of ho̱ll*i* (with the double, or dinounced l), to distinguish it from ʜo̱l*i* *(holy)*.

No doubt can exist as to the relation of ŭ to ū.

The Germans have a great habit of confounding û with ī, and ù with ĭ;(18) this will serve to give an Englishman (who confounds them with ū and ŭ respectively) some clue to the pronunciation of this sound, in order to produce which it is necessary to pout the lips.

We do not attempt to describe the mechanism of these sounds; to be at all understood, they must be heard continually during some months, till the ear becomes gradually able to appreciate and imitate them. We have, therefore, contented ourselves in general(19) with giving a list of words in which, as we utter them, the sounds occur.

The orthography and pronunciation of our language are so opposed to one another, that we must not be surprised at meeting with many anomalies in the common mode of referring the stopped to the full vowels in English. We are accustomed to consider ai and yū(20) as pure vowels, because they are the alphabetical names of the vowels i, u. Grammatically, then, the full and stopped vowels in the English language would have to be arranged thus, ai, ĭ; ī, ĕ; ē, ă; o̱, ŏ; yū, g̭; no proper place

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(18.) It is on the banks of the Rhine where this pronunciation is in full force. In the same part of Germany the final *n* is frequently dropped. Thus we recollect a servant girl at Weinheim (=VainʜHaim), in Baden (=Bādən), asking for some teacups, "tsŭm shpīlə," *for play*, instead of "tsŭm shpûlən," *for rincing*. In Tyrol and Austria, ū ŭ take the place of û ù, and ê è of g̨ g̭. Thus we were once directed to an inn at Innsbruck (=Ĭnzbrŭk, which *should* have been Innsbrücke=inzbrùkə, *the bridge over the river Inn*), by the name "tsŭm gŏldnən lêbən," *the sign of the golden* LIFE, instead of "tsŭm gŏldənən lg̭vən," *the sign of the golden* LION!

(19.) In giving Dr. Orpen's account of the mechanism by which the seven principal long vowels, and Mr. Knowles's, of that in which the three stopped vowels, Ĭ, ĕ, g̭, are produced, we have departed from this rule; and we leave the reader to judge from these specimens of the degree of satisfaction which he would have experienced from reading similar descriptions of the remaining 29 vowels; for we reckon 13 long, short, and stopped, in all 39 vowel sounds.

(20.) The nature of our work has frequently obliged us to anticipate the meaning of our symbols. The diphthongs will be explained in the next chapter. Here we may remark that ai represents *i* in t*i*de, and yū, *u*, in *u*se.

being assignable to the vowels ā, ō, ɐ̱, ū, ŭ. The vowels ĭ, ĕ, ă, ŏ, ɐ̮, are consequently termed, in general parlance, short ai, short ī, short ē, short o̱, and short yū, respectively, so deeply has this anomalous arrangement struck its roots into our very modes of thought. It is needless to say that this is not a proper mode of naming them. The short and stopped can only be satisfactorily spoken of as short ī, stopped ī, short ɐ̱, stopped ɐ̱, &c., for *i*, ĭ, ə, ɐ̮, &c.; or, the word *short* may be prefixed to the short vowels, of whose correspondence with the long vowels there can be no doubt; and the stopped vowels may have the letter t subjoined, thus, ĭt, ĭt, ăt, &c. This is similar to the present mode of naming the consonants.

It will be found difficult to pronounce a stopped vowel before r, when r is not followed by a vowel. In order to execute such sounds as ŏr, ăr, &c., it will be necessary to trill the r more forcibly than is customary in England;—indeed, we are, at present, not aware of *any language* in which such syllables occur, although Rapp continually indicates their existence even in English. This ignorance on our part may arise from a deficiency in our own organs of hearing, but we seem to be quite able to pronounce the stopped vowel before r, and we are, therefore, more inclined to attribute our want of knowledge on this point to a want of sufficiently careful or extended observation.

All stopped vowels are necessarily *short;* they are, in fact, much shorter than the short full vowels (§ 2), being merely the *rudiments* of vowels.(21) They are most common in languages with many consonants, such as the Teutonic (22) (in which the English (23) is included); while in languages

(21.) Hence *short* is an ambiguous term, applied to *two* species of vowels, which differ in quality and trench upon each other's territory; thus, (using the *natural*, or 5th principal vowel as an example):

$$\overbrace{\underset{\text{Long.}}{\text{ɐ̱}}\qquad\qquad\text{ə}}^{\text{FULL.}}\hspace{-0.6em}\underbrace{\hspace{0.6em}\qquad\qquad\overset{\text{STOPPED.}}{\text{ɐ̮}}}_{\text{Short.}}$$

When we use the word *short* absolutely, as designating a peculiar kind of vowel, it will always represent the short *full* vowel, and never the short *stopped* vowel. The three classes of vowels will be simply termed *long, short,* and *stopped* vowels—three convenient monosyllables.

(22.) If we represent a consonant by a vertical, and a vowel by an horizontal line, then, according to Rapp (*Ph. d. Spr.*, vol. 1, p. 157), "the *idéal* of the Greek, Latin, and especially the modern Roman [Spanish, Portuguese, Italian] syllable appears to be | —; that of the Teutonic, | — | ; and, finally, that of the Slavonic, | | —."

(23.) In a calculation of 6,293 syllables, selected upon a principle most likely to insure an approximation to the *general* character of our language, the following result was obtained:—Full vowels, long and short, 2,697; stopped vowels, 3,596;

where the syllable is originally composed of one or two consonants, followed by a vowel, they are, of course, comparatively rare. The consequence of this has been, that the three kinds of vowels have not been discriminated by grammarians; and while, on the one hand, we find the designation *short* applied to both short and stopped vowels, we also meet with the term *long* applied to both long and short. The distinction in the latter case was supposed to consist wholly in *accent*, an idea which the examples in Sect. 2 are sufficient to disprove. It is, perhaps, most usual to confine the term *short* to the short and stopped vowels, the latter being in themselves essentially short also, although we prefer employing the abbreviated phrase "short vowels" for the short full vowels only. Thus, in the *Second Phonic Reading Book*,(24) we have, as examples of the vowel marked a^4 (the figure being superscribed, instead of postscribed), first the words "m*a*ture, m*a*caw, p*a*pa, c*a*reer, s*a*lute, b*a*boon, rot*a*ry, chin*a*, ide*a*, c*a*nary" (in *all* of which, it must be observed, that the real sound of the italic *a* is ə, and not *a*, a sound which, as we have already mentioned, is always superseded by ə in our language), and next "*a*m, *a*n, *a*s, *a*sh, *a*t" (in *all* of which the sound is ă). It is really surprising that the authors of this work did not perceive the great error of pronunciation which would be committed if the *a* in the first series of words were really pronounced as the *a* in the second series, or vice versâ.(25)

giving a majority of 899 in favour of the single class of stopped vowels over the other two. The order of frequency of occurrence of the full (including, in this calculation, which was made for phonotypical purposes, the short vowels under the same sign as the long ones) and stopped vowels, the coalescents, w and y, and the diphthongs, ai, oi, au, yū, was found to be ī, ĭ, ɐ̱, ĕ, ă, ĕ, o̱, ŏ, ai, w, ō, ā, ū, au, ŭ, yū, oi, y, Other curious results of this calculation will be given hereafter.

(24.) Published by J. W. Parker, London, 1844, under the sanction of the Committee of Council upon Education.

(25.) In the same work our ɐ͓ is marked u^2, and illustrated by "*u*s, *u*p" (p. 9), by "c*u*r" (p. 32), and by the final "er," &c. (pp. 62—77, &c.) Thus ɐ̱ and ɐ͓ are manifestly confused. The important ə is also confused in the final "*er*" with ɐ͓; and in other cases is entirely disregarded. That the author felt some misgivings on these points is clear from the following passages:—"The number of words in this lesson (XI), will give an opportunity of impressing the rule that *e*, in this situation [i. e., "in the final, or unaccented syllable, *er*"] has *nearly* the sound of the short *u*" (ɐ͓), pp. 173—4; yet in the text it is made *identical*. It is true that, in p. 62, we have only "er=ur," instead of "er=u^2r," but that this is only a misprint appears from p. 76, where we have "or=u^2r" in such words as "maj*or*, tut*or*," &c.; unless, indeed, the following words, "this (12th) lesson gives examples of the irregular sound of *o* in the final syllable, *or*, where it *closely resembles* the sound of *er* in the last lesson," (p. 174), imply that the authors wished to make a real *distinction* between the two cases; if so, it is only another error. As no such word as "lit*tle*, mid*dle*, a*ble*," &c., is found in either the First or Second Reading Book, the authors have not recorded their opinions upon them.

The reader is recommended to try the experiment for himself, taking care to leave the accent in its present place; of course the sound ă cannot be given to *a* in "chin*a*, ide*a*," at all, as by its very nature it requires a following consonant to *stop* it.

With regard to the other opinion, namely, that the short vowel is the unaccented long vowel, we may remark that, as a general rule, to which there are exceptions, a reader would not be misled to any important extent if a long vowel were printed for a short one, and the accent always marked. Thus, supposing we mark the accent by a small dot placed on a level with the top of the line at the close of the accented syllable, such words as prĭm·ītĭv, Sɐ̭n·dē, fīlŏs·o̱fī, rī·dɐ̱r *(primitive, Sunday, philosophy, reader)*, which should have been printed prĭm·*it*ĭv, Săn·d*e*, filŏs·*ofi*, ɪ̭·dər, will most probably be read correctly; but we cannot expect quite the same from bŭz·ɐ̱m, ē·bɐ̱l, kē·pɐ̱bɐ̱l, when written for bŭz·əm, ē·bəl, kē·pəbəl *(bosom, able, capable)*, unless we took care to give a particular definition to the value of the vowel ɐ̱ when not under the accent. And such words as skēp·grēs, jăk·ās, &c. *(scapegrace, jackass)*, would run the risk of being pronounced skēp·gr*e*s, jak·*a*s, or skēp·grɐ̭s, jăk·ɐ̭s, or, perhaps, skēpgrĕs, jakĕs; as we actually find laim·ʜaus *(Limehouse)* degraded into laim·ɐ̭s. The number of such words is, however, so limited, especially by the circumstance that no short vowel occurs, in modern languages, in an accented syllable, and very few long vowels in an *un*accented syllable, (indeed, if we mark a secondary accent, we may almost affirm that *no* long vowel is now found without either a primary or secondary accent), that, while it is found a great practical convenience to use the same symbol for the long as for the short full vowels, scarcely any inconvenience can be occasioned by this practise to the English reader, *provided the position of the accent is carefully indicated.*(26)

(26.) This is the case in Mr. Isaac Pitman's systems of Phonography and Phonotypy, to the explanation of which we shall devote a subsequent chapter, and we wish to draw the attention of our readers to these circumstances, because they have already occasioned difficulty to the learners of these systems. It is found to be highly convenient, for many purposes, not to have more than two kinds of signs for the vowels, and the classes selected to be represented by these, instead of being long (full) and short (full and stopped), are full (long and short) and stopped (short), because these differ in *quality;* whereas the long differs only from the short (full) vowel in *duration.* If the full short and stopped short vowel are represented by the same sign, the mistake of denoting qualitatively different vowels by identical symbols would be committed. The marking of the accent, then, becomes of importance, and accordingly in phonotypy it will be always marked (actually, or by virtue of a rule); every *full* vowel, then, not marked (actually, or virtually) with either a primary or secondary accent, must be considered as short. Hence, in kē·pɐ̱bɐ̱l, ɐ̱ ɐ̱ must be

Dr. Rapp, who derives both the long and stopped (or, as he terms them, *sharpened)* vowels from the short vowels, considers that both arise from our endeavouring to add *weight* or importance to the short vowel in certain syllables; and, in the second instance, to preserve the quantity at the same time, which could only be done by hurrying on to the consonant, and pronouncing it more *sharply*. This *sharpening* he represents by doubling the succeeding consonant, as in the English words *bell, tell, till, back*, &c., and the German *mann, kann, wenn*, &c. There is an inconvenience in using the double consonant for this purpose, because we are thereby precluded from employing it to represent the *double* or *dinounced* consonant (as hereafter explained), the existence of which he seems, however, to deny. Dr. Rapp does not appear to be very consistent incarrying out this method of expressing the stopped or sharpened vowels; and we prefer using separate symbols, as explained in this section.

Although the stopped vowel is stifled at its birth, as already mentioned, it is sufficient to set on the voice to a spoken consonant, and if that consonant be a continuous one, it may be prolonged; and such syllables as ĭn, sĭv *(sieve)*, glg̮v *(glove)*, &c., may be held for any length of time, so that though the *vowel* they contain is essentially *short*, the *syllable* may be of indefinite length. To this point we shall have to recur in our Chapter on "QUANTITY." In case of a whispered continuous consonant, the whisper may, of course, be continued as long after a stopped, as after a long vowel; thus, ĭf, fg̮s *(fuss)*, Hĭs *(hiss)*, &c. The vowel is just as much stopped by one consonant as by another, and therefore remains short, whatever be the nature of the succeeding consonant.

SECTION 4.—*On the Nasal Vowels.*

THE vowels which have been treated in the preceding sections are all *oral* vowels, that is, pronounced through the *mouth*,(1) by way of the lips; but it is also possible to emit vocalized breath through the apertures of the nostrils alone. The vowels thus produced cannot be precisely the same as the former, which depend, for their full development, upon peculiar positions into which the parts of the mouth anterior to the uvula are

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equivalent to ə ə, so that kĕ·pg̮bg̮l=kĕ·pəbəl upon this assumption; dg̮z·g̮n=dg̮z·ən; sĭz·g̮m=sĭz·əm; bŏt·g̮l=bŏt·əl; &c., without any ambiguity whatever. When this rule, to which we shall recur in its proper place, is fully comprehended, there will be no difficulty in marking these three species of vowels by means of full and stopped vowel characters and the accent sign. The number of types which will thus be saved to the printer is considerable.

(1.) From the Latin *os*, gen. *oris*, "a mouth," comes the adjective *oralis*, "pertaining to a mouth."

placed; whereas, when the sound passes through the nose, the uvula descends, and those portions of the mouth produce no perceptible effect. Some analogies may, however, be discovered between the oral and *nasal* vowels, as they may be termed, but the analogies here given are not advanced with any great degree of certainty. No vowels of this class occur in English; and there is necessarily considerable difficulty in deciding upon sounds which are entirely foreign to our organs. The best known languages which contain these sounds are French, Portuguese, and Polish, possibly other Slavonic languages may contain them also. Hindūstānī is reported to possess them, though this may, perhaps, rest on a misconception.

The four French nasals which occur in the words "*fin, an, un, on,*" are generally well known. Although they are pure and simple vowels,(2) the French employ *two* letters to represent each of them, the second letter being n (or m) in each case. This n will hereafter be used in another sense,(3) but it will be convenient to use a similar letter for this purpose, and we shall adopt n̲, which must be considered as an orthographical sign, having no meaning in itself, but serving as a diacritical mark when placed after a vowel character, in the same way as the accent or other mark is placed over or under the vowels à, á, ɐ̲, &c. According to Dr. Rapp, the vowels in the four words "*fin, an, un, on,*" ~~just cited,~~ would, if pronounced orally, be *é, a,* ə, *o;* but we shall adopt in̲, an̲, ɐn̲, on̲, as their respective representatives.(4)

The sounds of the Polish letters e̜, a̜, when they represent nasal vowels, do not in any wise differ from in̲, on̲.

(2.) Yet it is very probable that they arose from syllables like àɴ, or àn. Rapp seems to have established the fact that the nasal vowels occurred in the Latin language under the form of the terminations *im, em, am, om, um (Ph. d. Spr.*, vol. 1, pp. 325—9.) The Portuguese is the only language which has represented them as pure vowels, the symbol used being a *tilda* (an accentual mark resembling the Greek circumflex, as in ᾶ) over the corresponding oral vowel. It would, however, be inconvenient to employ this sign over some of our vowel characters, and, therefore, we prefer, for typographical purposes, the notation proposed in the text. The Portuguese, too, are not consistent in their notation, frequently substituting for the tilda the old Latin m, or a French n, written after the vowel.

(3.) In French and Portuguese, n and m not only help to represent nasal vowels, but, in certain positions, have the usual powers of n and m; thus, *fin*=fin̲, but *innocent*=īnǫsan̲, *faim*=fin̲, *femme*=fàm.

(4.) The reader may compare the sounds of the syllables ăɴ, àɴ, ɐ̥ɴ, ǫɴ, respectively. As pronounced by some, these sounds approach nearer to the syllables ăɴ, ŏɴ, ɐ̥ɴ, o̱ɴ *(sang, song, sung)*, respectively. We use in̲, instead of en̲, for the first nasal, because, unable to determine the corresponding oral vowel, we wish to approximate to the established French orthography.

In Portuguese there is a peculiar set of nasals, of which we are not in a condition to speak with certainty, our knowledge of the Portuguese pronunciation being very slight, and entirely derived from a Spaniard; added to which our impression differs from the account given by Dr. Rapp (*Ph. d. Spr.*, vol. 3, pp. 73—78). Besides the four French nasals, the Portuguese appear to have four others, in which the pure vowel is much more distinctly heard than in French; these we shall, therefore, represent by īṉ, āṉ, ōṉ, o̱ṉ, as in the words *fim*, *vāa*,(5) *não*, *Camões*.(6) In uttering these sounds the uvula does not appear to descend so as to completely block up the passage of the breath, and in consequence the pure vowel sound is better heard. In comparison with these, the former set may, therefore, be termed *stopped*, as the breath is more thoroughly stopped off from the mouth, and made to pass through the nose only. The Portuguese nasals may, then, in contradistinction, be called full. The nasals may be arranged in the following scheme:—

Table of Nasal Vowels.

EXAMPLES.		SYMBOLS.	
FULL (Portuguese);	STOPPED (French).	FULL.	STOPPED.
fim	*fin*	īṉ	iṉ
vāa	*an*	āṉ	aṉ
não	—	ōṉ	—
—	*un*	—	ɐṉ
Camōes	*on*	o̱ṉ	oṉ

To these Dr. Rapps adds ūṉ; but in the examples which he cites (as Portuguese *hum*) our Portuguese instructor pronounced ɐṉ, and we have, therefore, not admitted this nasal.

The Hindūstānī nasal may, perhaps, arise from an incorrect pronunciation of the Sanscrit cerebral n̬, hereafter described.

(5.) The long mark over *a* and *o*, in ***vāa, Camōes***, is, for want of the proper types, used for the tilda.

(6.) Compare the syllables ĪN, āN, ŌN, O̱N, respectively. Dr. Rapp seems to consider the three last instances in the text as examples of nasal diphthongs.

CHAPTER 6.—ON THE COMPOUND VOWELS.

"OUR appreciation of the pitch of a musical sound depends entirely on the number of its vibrations performed in a given time. All sounds whose vibrations are performed with equal rapidity, whatever be their difference in quality and intensity, affect the ear with the sentiment of accordance, which we term *unison*, and which irresistibly impresses on us the conviction of a perfect analogy or similarity between them, which we express by saying that their *pitch* is the same, or that they sound the same *note*. In fact, their impulses on the air, and on the ear through its medium, occurring with equal frequency, blend and form a compound impulse, different in quality and intensity from either of its constituents, but not in the frequency of its recurrence; and, therefore, the ear will judge of it as of a single note of intermediate quality.

"But when two notes, not in unison, are sounded at once, the ear distinctly perceives both, and (at least, with practise, and some ears more readily than others) can separate them, in idea, and attend to one without the other. But, besides this, it receives an impress from them jointly, which it does not acquire when sounded singly, even in close succession, an impression of concord or dissonance, as the case may be, and is irresistibly led to regard some combinations as peculiarly agreeable and satisfactory, and others as harsh and grating." (1)

Precisely in the same manner as two musical notes may be thus blended together, producing a joint effect different from that of either, taken singly, although *practised* ears may distinguish the two component sounds, two *vowel* sounds may be combined by the speaker, so as to produce a peculiar joint effect, which, accordingly as the blending is more or less perfect,(2) will be more or less easy to separate into its component parts. Such joint effects are called diphthongs. The only vowels which can be combined with others in the manner just pointed out, are usually supposed to be ī and ū; but we are induced, by numerous experiments, to believe, that the short sound of ɐ̱—that is, ə—may be also combined with other vowels.

(1.) Herschell, Art. SOUND, par. 208, 9.

(2.) This may be compared to the striking of the notes in a cord successively (arpeggio) or simultaneously. "In all diphthongs, the two sounds are successive, and if we keep up the sound as long as the breath lasts, it is the last vowel *alone* that is sounded, after the first moment; but, in the *b*iphthong (coining a new word to explain the meaning of a new idea), the sound is the same all throughout, and never varies, as long as our breath lasts to cause vocal vibration. This is a matter that, as far as I know, never has struck any one, nor, of course, been noticed or explained.

Dr. Rapp, whose theory of diphthongs differs very considerably from that laid down in this treatise, makes the following two conditions, in order that two vowels should constitute a diphthong (*Ph. d. Spr.*, vol. 1, pp. 33—4):—"First, the diphthong must constitute a single syllable;" and, second, "the accent must always fall upon the first of the two component vowels." The first of these conditions must be universally admitted; the second does not appear necessary; but diphthongs may be conveniently divided into such as have the accent on the second vowel, or *improper* diphthongs (the *first* element being *i* or *u*), and those which have the accent upon the first vowel, or *proper* diphthongs (the *second* element being *i* or *u*); and to these may be added the third class of *quasi* diphthongs, the second element being ə. Dr. Rapp insists that, instead of *i* and *u*, the second element in the proper diphthongs is originally *e*, *o*; and considers *i* and *u* as due to *theory* only. Such points it is almost impossible to determine without personal intercourse, as the formation of new diphthongs is a matter of great difficulty; we are, therefore, obliged to content ourselves with the results of our own observations.

A diphthong consists, then, of two elements, with either of which another diphthong may be formed by prefixing or subjoining a suitable vowel, and thus triphthongs will result.

From triphthongs, tessaraphthongs (with *four* elements) may be formed in the same manner; nor does there appear to be any theoretical limit to the multiplication of such compound vowel sounds; practically, the limit is soon reached.

According to the grammarians, the vowels which compose a diphthong are always *short;* and two short vowels being (according to their theory, as already explained) equivalent in length to one long one, a diphthong is necessarily equivalent to one long vowel. This theory labours under disadvantages in the case of triphthongs, in which three short vowels are combined, the result being, according to their mode of calculation, equivalent to a long vowel and a half, which would increase the length of a syllable by one-half the duration which they assign to it. In the present

The fact is, that, in the French *eu* [ɣ̣], the tongue is in the position of the short e, in BIT [ĕ? or ʙ̱?], and the lips in the position of a compressed *oo* [ū], *at the same time, and all through.* The English *eu*, or *ew*, in feud, *new*, *few*, *pew*, is a diphthong. Diphthongs are chords of two notes struck in succession; triphthongs are chords of three notes struck in succession; BIPHTHONGS are chords of two notes *struck together*, and *synchronous.* Diphthongal and triphthongal chords are *running* chords. There is no *biphthong* in English. I believe that I and U were originally *biphthongs*, but are now diphthongs in English."—(Private letter from Dr. Charles Orpen.) We leave this point to the consideration of our readers.

work, these accurate measurings of the time of duration of vowel sounds have been disregarded, as due only to theory, and absolutely unfounded in nature. Our diphthongal theory, therefore, must be entirely independent of it.

SECTION 1.—*On the Improper Diphthongs.*

IMPROPER DIPHTHONGS are those in which the vowels *i*, *u*, which may be termed the modifying vowels, precede that with which they are combined, leaving the accent to rest on the second vowel. The consequence of using *i* and *u* in this manner, is necessarily to modify their powers; for if there were no alteration in them—if the sounds of the two vowels struck the ear as clearly and separately as before, there would be no diphthong, but only the succession of two vowel sounds; the fact of there being a modification constitutes the diphthong. In the present case, the modification is of a very remarkable kind, and serves, in a curious way, to connect the vowels and consonants.

Let the reader pronounce the vowels ī, ā, in succession, clearly, distinctly, and deliberately, not running one into the other, but commencing the second, as the first is concluded; then let him gradually increase the rapidity of uttering ī, and try to pronounce *iā*. He will soon discover that he no longer pronounces *i*, but places his tongue *nearly* in the same position which would be required for *i*, and allows a vocal whisper to pass before he falls upon the ā. In fact, he brings the back part of the tongue nearly in contact with the back part of the palate, and produces a species of hiss as he utters the ā. This, it will be seen, is the characteristic of the hissing consonants, among which this modification of *i* is placed by the German grammarians.(1) It is certainly true that a sibilant is thus produced, but it will be better, perhaps, to give it such a designation as will preserve the idea of its being derived from a modification of a vowel sound. Now we have seen that it is that modification of *i* which is produced by our endeavouring to make *i coalesce* with ā; let it then be called a *coalescent.* This coalescent is really different from *i*, for the effect of saying *iā* is, as before shewn, slightly different from the ultimate result obtained; but it might be considered a sufficient symbolisation of this result to write *iā* together, and tie them in some manner, thus, $\overline{i\bar{a}}$; or we we might write iā without a diacritical mark for i. Considerations connected with the rest of the scheme of symbolisation here given, however, make it advisable to have a different mode of expressing this modification

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(1.) Bekker, *Ausführliche deutsche Grammatik*, vol. 1, p. 70, 6. *Schmitthenner*, Teutonia, p. 12, C. Rapp, *Phys. d. Spr.*, vol. 1, p. 61, denies that y (his j) results from *i*, but asserts that it results more accurately from *e*. We cannot help thinking that, in this respect, he has been led away by theory.

of *i*, which, being in reality another element of speech, should be represented by a new symbol, such as y; for it is only the *i*, and not the ā, which is at all modified; the result will, therefore, be symbolized by yā. In such cases, the y partakes of the nature of a spoken consonant, but a whispered form of y may sometimes be detected, and this we shall represent by yh, in which h is a symbol like n̠ and the accentual marks, having no value in itself, but only serving to modify the meaning of the consonant to which it is subjoined. The principal case in which yh occurs will be treated subsequently (Chap. 8, Sect. 5); but it may be just mentioned that y occurs before a *consonant* in the word yrŏshən, the Berlin pronunciation of *groschen*=grŏshən.

The generation of y from *i* is so clear, that many grammarians and writers upon phonetics were loath to allow y to be a consonant, while they felt, at the same time, the impropriety of classing it as a vowel; hence, to compromise matters, they invented the name *semivowel*—a remarkably unmeaning term, but serving to point out an important fact, viz., that y forms a link between vowels and consonants usually so called. Thus, let the reader take the series of sounds represented, or hereafter to be represented, by īē, *i*ē, yē, jhē, ghē, gē, he will find that they form a regular series, and that it is exceedingly difficult to mark the exact boundaries of each sound, to say where vocalism ceases, and consonantalism commences. No surprise, therefore, should be felt that some of the members of this chain are confounded with one another. Thus, in Berlin, we hear "ēnə yūt yəbrātənə yànz ŭnd ēn yūtĕs yūrkən zālāt· zĭnd ēnə yànz yūtə yābə yūtĕs Yŏtĕs," instead of "ainə gūt gəbrātənə gànz ŭnd ain gūtĕs gūrkən zālāt· zĭnd ainə gànz gūtə gābə gūtĕs Gŏtĕs," (that is, "eine gut gebratene Gans und ein gutes Gurken-Salat sind eine ganz·gute Gabe gutes Gottes"—*a well-roasted goose and a good cucumber salad are a very good gift of Good God.)* This sentence is a German invention, to display the peculiarities of the Berlin pronunciation; but such confusions are not confined to dialectic peculiarities; we continually meet with them in etymology. Thus, the English "*y*esterday" is clearly the German *g*estern tag=gĕstərn Tāgh; and it is, probably, from this very confusion that g is interchanged with dzh (the English j, a combination which much resembles dy) both in English and in Arabic. In the latter language, indeed, we find dzh, zh, and g, as different pronunciations of the same letter, all referable to the similarity between y and zh (the French j.)

/z
/ʒ
/z
/z

cf. Sans-
crit
[illegible]

As the precise nature of a sound can only be learned by frequent repetitions, and as the coalescent so far partakes of the nature of a consonant as to experience some slight modification with every vowel with which it coalesces, a table of words is subjoined, containing improper diphthongs formed by combining this modified sound with almost all the vowels.

Table of Y Diphthongs.

	EXAMPLES.			SYMBOLS.		
	FULL.	SHORT.	STOPPED.	FULL.	SHORT.	STOPPED.
1.	*ye*	can-*ye*	—	yī	y*i*	yĭ
2.	*yea*	darg*lie*lo (it)	*ye*t	yē	y*e*	yĕ
3.	*ya*hoo	tag*lia* (it)	*ya*m	yā	y*a*	yă
4.	*yaw*n	—	*yo*n	yō	y*ō*	yŏ
5.	*yea*rn	famil*ie* (ger)	*you*ng	yɐ̱	yə	yɐ̭
	*yeu*x (fr)	—	—	yɐ̬	y*ɒ*	yɐ̖
6.	*yo*ke	sog*lio* (it)	sanct*io*nne (fr)	yo̱	y*o*	yo̭
7.	*you*	ann*u*al	*j*ung (ger)	yū	y*u*	yŭ
	*Jü*gel(2) (ger)	—	*jü*ngst (ger)	yû	y*ú*	yù
8.	b*ien*	=byin̲				yin̲
9.	bril*la*nt	=brīlyan̲ *or* brīyan̲				yan̲
10.	cotil*lo*n	=kōtīlyon̲ *or* kōtīyon̲				yon̲

In those cases in which instances have not been assigned, none could be furnished; thus no legitimate word contains yĭ, but it is frequent in mispronunciations, thus "yĭtər," Berlin dialect, for "gĭtər" (German *gitter*), and "yĭt, yĭs," for "yĕt, yĕs," in English.

The combination yū is deserving of particular attention; it is formed from *i*, *u*, which vowels will of course combine either into a proper or improper diphthong, according as the accent is laid upon the *i* or the *u*. The improper diphthong yū admits of the short sound y*u*, common enough in English,(3) but iu (as the proper diphthong will be represented) does not admit of this abbreviation.(4)

Let the reader now proceed to treat ū in precisely the same way as he treated ī. Let him first pronounce ūē in succession, clearly and separately, and then shorten the duration of the ū till he makes it *u*, and he will then perceive that the sound of *u* is modified in a manner similar to that in which *i* was modified in the former case. Instead of saying *u* he contracts and rounds the lips and at the moment he pronounces the subse-

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(2.) A well-known bookseller at Franckfurt am Main.

(3.) Theoretically, much more so than practically; for, as will be hereafter pointed out, the y after t is often changed into sh, and after d into zh (to which sibilants it naturally bears a great resemblance), while, at the same time, *u* becomes ə; thus, theoretical nēty*ur* (nature) becomes practical nētshər, while theoretical vɐ̱rdy*ur* (verdure) becomes practical vɐ̱rdzhər, and differs in no respect from "*verger*." Some persons, however, make a point of preserving the theoretical pronunciation in such cases, but it requires an effort to do so.

(4.) In some of the former sheets of this work, this distinction between yū and iu has not been properly attended to, the reader is, therefore, requested to alter *all* the iu into yū or yu, since iu never occurs in any recognized pronunciation.

quent vowel lets the mouth resume its usual transverse form, and thus says *way*. The characteristic of the hissing sound is also perceptible in this modification of *u*, and it is consequently placed among the hissing letters by the German grammarians.(5) It seems best, however, to consider it as the form under which *u* diphthongizes with a succeeding vowel, and to term it a coalescent, representing it by w, a modification of the form v, which was the old form of u. The consonant to which this coalescent bears a great relation is necessarily a lip consonant, and it is familiarly known to Englishmen that w is often confounded with v by bad speakers both in London and the provinces. We find also that some nations have a difficulty in saying w, and universally substitute v (or vh) for it. Thus in all Arabic words in which w occurs, which have been adopted in the Turkish, the w is transformed into v, so wəzīr in Arabic becomes vəzīr in Turkish. The rationale of this will be further explained in chap. 8, where the German w will be treated. Dr. Rapp (*Ph. d. Spr.* vol. i, p. 61,) after remarking that y and vh (the German w), have been termed *semi-vowels*, says that this term "is totally inappropriate or rather meaningless; and the idea that these sounds arise from a previous i or u, or are next to them, is wrong. On the contrary, the pure (not the exalted) y and vh are not related to ī and ū or to ē and o̱, and the unaccented ē and o̱ slurred on to another vowel, produces the spirants (y and vh) as certainly as ī and ū would do." We cannot subscribe to this opinion because Dr. Rapp considers w as a simple ū prefixed to the vowel, and does not seem to recognise its difference from ū. The English w is as much a new letter as the German w, they are *different* from, but next to one another.

As may be supposed, w may be prefixed to any other vowel sound, as shewn in the following table.

Table of W Diphthongs.

	EXAMPLES.			SYMBOLS.		
	FULL.	SHORT.	STOPPED.	FULL.	SHORT.	STOPPED.
1.	*wee*n	liq*ui*do (it)	*wi*n	wī	w*i*	wĭ
2.	*weigh*t	seg*ue* (it)	*we*t	wē	w*e*	wĕ
3.	g*ua*no	seg*ua* (it)	q*ua*ck	wā	w*a*	wă
4.	*wa*ter	—	*Wa*tts	wō	wō	wŏ
5.	*wo*rd	eq*ua*ble	*worr*y	wɐ̱	wə	wɐ̮
6.	*wo*ke	seg*uo* (it)	—	wo̱	w*o*	wo̮
7.	*wooe*d	—	*woo*d	wū	w*u*	wŭ
8.	bes*oin*	bĕzwiṉ (fr)				wiṉ

(5.) Or, rather, it is vh, the German w, which they place there. The Germans ignore our w, and consider it merely a vowel.

It is necessary that the reader should be able to distinguish accurately between īī īē īā, &c., ūī ūē ūā, &c., and yī yē yā, &c., wī wē wā, &c. Each of the former combinations represents *two* syllables, each of the latter only *one*. Great confusion seems to exist in the minds of writers in different nations that are without one or both of these modifications. Thus the French believe that there is *no* distinction between ī and y; and the Germans are very troubled about w. The following table will aid the reader in appreciating these distinctions more accurately.

Table for shewing the difference between
Successive Vowels *and* *Improper Diphthongs.*

EXAMPLES.	SYMBOLS.	EXAMPLES.	SYMBOLS.
allegr*ia* (it)	īā	*ja* (ger)	yā
id*ea*	īə	gen*ial*	yə
ee-awe *(braying)*	īō	*yaw*n	yō
g*eo*logy	*i*ŏ	*yo*n	yŏ
gen*ea*logy	*i*ă	*Ya*rrow	yă
Lyc*eu*m	*i*ɐ̭	*you*ng	yɐ̭
all*ii*rt (ger)	*i*ī	*ye*	yī
ouï (fr)	ūī	*we*	wī
fr*ui*tion	ūĭ	*wi*sh	wĭ(6)

When an unaccented syllable immediately follows one which is strongly accented, it is sometimes impossible to say whether *i* or y should be pronounced, because there is a tendency to bring the *i* into coalescence with the following vowel, as in gen*iu*s, exper*ie*nce, un*io*n, &c. In poetry, the *i* in such cases is not reckoned to form an independent syllable, and such cases may therefore be classed as diphthongs, thus, dzhīnyɐ̭s, ĕkspiəryəns, yūnyən; neither pronunciation can be called incorrect.

It has been already noticed that a whispered form of y occurs, which we symbolize by yh̍; a whispered form of w also seems to exist, and it may be denoted by wh. It is usual to say that the English words *what*, *when*, *which*, *wheel*=Hwŏt, Hwĕn, Hwĭtsh, Hwīl, where H represents the aspirate. In such cases, it is, perhaps, difficult to decide whether the initial modification is Hw, or wh; but we incline to the latter opinion, and shall regard these words as=whŏt, whĕn, whĭtsh, whīl. At the same time it must be owned that the great majority of speakers say wŏt, wĕn, wĭtsh, wīl.

(6.) In most of these instances the accent is on the *first* vowel; but, in some, as g*e*ology, all*i*irt, fr*u*ition, it is on the *second*; such instances are more valuable in distinguishing the two cases. Although the sounds *i*ŏ and yŏ are so closely allied, no Englishman would think of confounding dzh*i*ŏlodzh*i* with dzhyŏlodzh*i*, even in the most rapid discourse.

As y forms one of a series of letters connecting the vowels with the consonants, so also does w. The series ŭē, wē, vhē, vē, bē, may be compared with iē, yē, jhē, ghē, gē.

Section 2.—*On the Proper Diphthongs.*

In the cases considered in the preceding section, the two component parts of the diphthongal sound were easily discriminated, and the *nature* of the difference between the sequence of the two vowels simply, and that of the modification of vowel sound requisite to form a coalescent, was readily perceived. In the proper diphthong this is not in all cases so easy. The two sounds combine with each other so perfectly, that it is often a matter of great difficulty to recognize the component elements, and differences of opinion upon this point must therefore be expected. It appears that when *i*, *u*, ə, follow a vowel, they may unite with it in different degrees of closeness, and that the effect produced on the ear differs considerably according to the degree of intimacy with which the two sounds are mixed. The greatest degree of union may be expressed by using the vowel signs without any diacritical marks (or rather those characters which in Part II., will be termed "indifferent vowel characters,") for the next degree the first vowel may be marked as full, and for the mere succession we have either two full vowels, or a full and a stopped vowel; thus, āī is the Italian *ahi!* āi the English *aye;* and ai the English *eye.* With regard to this last diphthong, considerable difference of opinion exists. Many persons believe its component parts to be ə*i*, so that on our principle of symbolization it would be ɐi, or əi; of this opinion are Franklin, Wilkins, and Smart; others (with whom we agree) believe it to be the mere union of *ai*, but in a closer degree than these two elements are united in *aye;* this is the opinion of Prof. Wheatstone, who informs us that he has made a machine which pronounces diphthongs "beautifully." A writer in the Edinburgh Review (vol. vi., p. 362) advances the somewhat singular opinion that *eye* is a *simple sound.* "We must take notice," says he, "of a great error committed by those who have stated that the vowel in *fine* was the same as that diphthongal sound [*aye*]. Whoever has been accustomed to read Greek according to the English fashion will immediately perceive the wide difference between χαῖρε and χεῖρε, the last having a *simple*, the former a *double* sound." It is of course indisputable that the sound in *aye* is different from that in *eye* (although we find the former spelled *I* in old writers), but it may consist of the same elements in *different proportions.* Thus according to our investigations, the English pronunciation of the two Greek words in question, may be represented by kāir*i*, and kair*i*, respectively. Rapp seems to consider that *ae* was the original diphthong, which, upon the *e* being pronounced more acutely became *ai*, and this, from the tendency of *a* to fall into ə, becomes at times *əi*. Our āi he considers a triphthong composed of the *three* short vowels *aai;* but this is only a theoretical triphthong, and as in this work ā is not considered as =*aa*, āi cannot be considered =*aai*, but must be still denominated a diphthong.

In Sanscrit, as has been before remarked, the vowel ê or ē is supposed to result from combining *a* and *i*, and is therefore reckoned as a diphthong. Mr. Cull (Art. *Stammer* in the *Penny Cyclopædia)* classes *a* in *ale* as a diphthongal sound, ending in a "well defined *ee* in *eel*." Grimm says that ē arises "from a *fraction*(1) between ā and ī." Schmitthenner *(Teutonia* p. 6) considers it as "an obscure pronunciation of ī." The fact seems to be that a difficulty is experienced in holding ē for any length of time, and that it degenerates into ī, so that the sound very frequently given to ē in accented syllables is ēi, which Mr. Smart aptly enough expresses by talking of the "tapering of ē into ī." This diphthong is, like the last, double in its appearance; in Italian we meet with ēi in *Dei;* in Portuguese we have ei in *perfeito*. It is the first to which Mr. Smart refers, although the second is also heard. Thus *ale* is commonly pronounced eil, and indeed we have the orthography *ail* for the same sound, although the meaning of the word is very different. This pronunciation seems also countenanced by the common termination ay as in *day*, *play*, *stay;* in *weigh*, *weight*, *neighbour*, the guttural *gh* being omitted in pronunciation we have the proper representation ei.

Of ō and ī we have only one combination, heard in *boy*, *toy*, *noise*, &c. It is ōi, belonging to the same class as āi, ēi; oi is not found. This sound is frequent in German, where it is either spelled *eu* or *äu*. Klopstock *(Ueber deutsche Rechtschreibung)* considers it to be composed of the elements *eü*, *e* being the same as in the German *ei* (our ai), where he says it sounds "like *a* with only a slight opening of the mouth, or like a half *a*," and *ü* being =û, so that, according to our rule, he would write aú. This idea must have arisen from the absence of ō in German, so that ā is the nearest approach to it; now ōi is very nearly =âi, and âi may by Germans be easily confused with āú or aú; and hence the error.

(1.) "The long vowel results from two short vowels; but the coalescence of two short vowels does not always produce a long one; for if two short vowels combine in such a manner that their duration does not become doubled, but remains single, they rather give up a portion of their full natural brevity, and, when united, only produce the quantum of simple brevity. We might call the result a *broken* vowel, without particularizing the exact mode of the fraction. Assuming that the short *full* vowel $=1$, the long full vowel would be$=1+1=2$; the broken$=\frac{1}{2}+\frac{1}{2}$ (or $\frac{1}{4}+\frac{3}{4}$, or $\frac{3}{4}+\frac{1}{4}$) $=1$."—Grimm; *Deutche Grammatik;* vol. 1, part 1, p. 32.

It would seem that the German diphthongs *eu*, *äu*, had not the same pronunciation originally which they have at present, as their present pronunciation ōi differs so very materially from the elements pointed out by the orthography. It is curious that in some parts of Germany this ōi has returned to āi, which frequently supplies its place in Saxony, while in Berlin it becomes ai. This is a singular example of the working back of a vowel through its several gradations.

In Italian we meet with o̱i in su*oi*, tu*oi*, v*oi*.

In Dutch there is a diphthong which seems to approach the real ɐi (or əi); it is there represented by *ui* in br*ui*send, and seems to differ from the French diphthong ɐ̧i (written œi) in *œillard*=ɐ̧iyār. This ɐi corresponds in such words to the German *au;* thus, in the word quoted, *bruisend*=brɐizənd, is, in German, brausend=brauzənd.

In German we meet with ūi in *pfui!*

In French the diphthong úi is of frequent occurrence, although some persons deny its real diphthongal value; but that it has the characteristics of a diphthong will be palpable upon comparing *lui*, *nuit* (him, night)=lúi, núi, with *luire*, *nuit* (shines, hurts)=lûīr, nûī. When ui, úi begin words, it is only the accent on the first syllable which prevents them from becoming improper diphthongs. It is clear that in case they were allowed to become improper diphthongs a new coalescent ɯ might be formed from û, and in fact most English people say ɯīt(2) for úit *(huit)*. The French protest against *oui* being pronounced wī as an improper diphthong, and insist upon its being sounded ui as a proper diphthong, and therefore in one syllable, by which monosyllabic character it is preserved distinct from ūī *(ouï)*.

In order to distinguish the two classes of diphthongs which have been pointed out, let those in which the connection is intimate be termed *close* diphthongs; the others may then be called *loose*. This nomenclature has been followed in the annexed

Table of Proper Diphthongs ending in i.

EXAMPLES.		SYMBOLS.	
LOOSE.	CLOSE.	LOOSE.	CLOSE.
d*ei* (it.)	perf*ei*to (port.)	ēi	ei
aye	*eye*	āi	ai
t*oy*	—	ōi	—
—	br*ui*send (dutch)	—	ɐi
—	œil (fr.)	—	ɐ̧i
su*oi*	—	o̱i	—
pf*ui*	—	ūi	—
—	lui	—	úi

(2.) If they do not say wīt, which is still more common.

These constitute the first class of proper diphthongs; the second class consists of those compound sounds which terminate in ū. As those compounded of *a* and *u* offer the only examples of more or less intimacy of connection, it will be best to commence with them. The degrees of closeness will, on the same principle as before, be expressed by āū, āu, and au. The first may be heard in the French c*aou*tchouc, r*aou*t (=kāūtshŭk, rāūt), being a species of caricature of the corresponding English words (=kautshŭk, raut), which substitute au for āū. In Italian we have examples of both āū (or *a*ū) and āu in the words *paura* (=p*a*ūr*a*) and *Laura* (=Lāura). The latter diphthong approaches very nearly to au. Compare the Italian l*au*de with the English l*ou*d. An Englishman who said "lāud," instead of "laud," would be esteemed to pronounce very provincially.

In precisely the same manner as our ai is, by many, taken to be composed of ə and i, and therefore =əi, our au is taken to be əu, and for the same reasons. That it has been taken for ōu, seems to depend entirely upon erroneous orthography. Rapp cites the form *ou;* but we are unable to appreciate all the various diphthongs which he admits.

We observed, in ē, a tendency to terminate in ī, and thus form the diphthong ēi, or ei; in the same way, o̱ has a tendency to become o̱u. Thus *know* is frequently pronounced no̱u; *snow* becomes sno̱u, &c. Some speakers in Yorkshire make a difference between those English words which, according to the present orthography, terminate in *ow*, and those which terminate in *o*, giving the sound of o̱u to the former, and o̱ simply to the latter. Thus they pronounce *snow*, *go*, as =sno̱u, go̱; and thus distinguish between *know* =no̱u, and *no* =no̱. In Sanscrit, o̱ is considered as a diphthong composed of *a* and *u*. Grimm supposes o̱ to arise from a *fraction* between ā and ū; Mr. Cull classes it among those diphthongal sounds which terminate in a "well-defined *oo* in *ooze;*" Mr. Smart says, "In a Londoner's mouth, o̱ is not always quite simple, but is apt to contract towards the end, finishing *almost* as *oo* in *too*." The fact seems to be, that there is a simple sound o̱, but that in speaking it is very frequently converted into the diphthong o̱u. If there were no such simple sound, the diphthong could not exist, and the very existence of the diphthong may, therefore, be taken as conclusive evidence of the existence of o̱ as a perfectly simple sound.

The diphthong ēu is very imperfect; it occurs in Italian, as *Europa*= ēuro̱p*a*.

The diphthong iu, although it does not occur in polite conversation, is deserving of remark, owing to its resemblance to yū, from which it must be carefully distinguished. Thus, instead of byūt*i* *(beauty)*, some persons say biut*i*; but this has a very unpleasant effect. In Yorkshire, an attempt is often made to pronounce yū after r, which is always difficult, and stress is consequently laid upon ī, whereby the diphthong becomes proper, instead of improper; thus the result produced is riul, briut, and, similarly, bliu, for rūl, brūt, blū *(rule, brute, blue.)*(3) This error may serve to point out the pronunciation intended by iu. It would seem that *ew*, in the present orthography, were meant to indicate this pronunciation; hence *new* is sometimes pronounced niu, instead of nyū. Niu may be more in accordance with orthography, but it is now reckoned a vulgarism in practise.

These few proper diphthongs of the second class may be tabulated as follows:—

Table of Proper Diphthongs ending in u.

EXAMPLES.		SYMBOLS.	
LOOSE.	CLOSE.	LOOSE.	CLOSE.
—	bl*ue* (Yorks.)	—	iu
*Eu*ropa (it.)	—	ēu	—
l*au*de (it.)	l*ou*d	āu	au
kn*ow* (Yorks.)	—	o̱u	—

SECTION 3.—*On the Quasi Diphthongs.*

THE diphthongs terminating in *i* and *u* are generally recognized in grammars and pronouncing dictionaries. Those which terminate in ə are not generally acknowledged, and the term "*quasi* diphthongs" may, therefore, be applied to them. According to Mr. Cull, the following sounds, which we have considered among the simple vowels, terminate in an "obscure and faint e in *her*" (ə), namely, the sounds in "*a*ll, *a*rm, *a*n, *o*n, *u*s, p*u*ll." We can detect this in the instance *arm*, as will be presently noticed; but we doubt the correctness of the other cases. Even in *arm* the sound is more due to the action of the consonant r than to any thing else. In *all* and *pull*, similar causes may produce similar effects.

(3.) "What Rapp means precisely [by the sound which we have symbolized by ȯ when full, and may express by o̤ when stopped, and ȯ when short] I cannot say for certain, not having heard him pronounce it; but, from what he says, his meaning is as clear as can be conveyed in writing. It is merely the English *u* in *brute, flute, lucifer, superb*, &c. *Fruit* may rhyme with *boot* at Birmingham and elsewhere, but I certainly never heard such pronunciatiou in good society. The same remark applies to calling *dew*, jū, and *duke*, dyūk, or jūk."—*(Private Letter from Mr. T. W. Thornton.)* We are perfectly unable to appreciate the distinction alluded to, and seem to hear brūt, flūt, lūs*i*fər, s*u*pe̤rb, dyū, dyūk, from all speakers, but such as incorrectly introduce the proper diphthong in the manner described in the text.

We shall have occasion to remark, when treating of the consonants, that the final *r* is very faintly sounded in the south of England; nay, it may almost be said that, in the south, the practise is not to pronounce r at all when *final*, that is, when following a vowel, and not followed by one, but, in such cases, to substitute for it the short natural vowel ə. The consequence of this is a series of sounds which Mr. Smart terms "single, but not simple elements," and calls "vowels which terminate in the guttural vibration." We shall consider these in order.

First, īə, or iə,(1) as heard in f*ea*r,(2) and also in id*ea*, which, in the south of England, is a perfect rhyme to the former word, although agreed to be inadmissible in poetry. When the *r* is properly trilled, it is not necessary to pronounce ī as iə before it; thus, in French, it is common to say dīr, and not diər. Mr. Smart says that the sound in *air* is accurately ēər; it may be so in his mouth, but to us the sound appears to be êr. This is, however, upon the supposition that r is properly trilled; when this is not the case, *air* is pronounced as êə. In the same way, Mr. Smart supposes that *more* is pronounced mo̱ər. To our ear the sound more resembles ō, and may be actually identical with the French ô in "ch*o*se," Italian *o aperto;* so that the correct pronunciation would be môr, and the common môə, or móə. These have, probably, several pronunciations; and some persons will pronounce them much more distinctly than others. Thus, "morning, mourning" are pronounced by some in such a manner that it is impossible to distinguish them; by others, the first is pronounced mōrnĭɴ, and the second, mo̱ərnĭɴ, while others, for the sake of distinction, call the second mūrnĭɴ. The other diphthongs belonging to this place are, aə, in *far*, which *may* be the same sound as â; ōə, in *for;* uə, in *poor*. Even when the r is trilled, the speaker is very apt to convert the preceding vowel into one of these diphthongs. In the following table, the r must be pronounced as in the south of England, with the "guttural vibration."

Table of Quasi Diphthongs.

EXAMPLES.	SYMBOLS.
fear, steer, cheer—weary, era	iə
air, pear—Mary, Sarah	eə (? ê)
far, star—tarry *(covered with* tar)	aə (? â)
for, nor—	ōə (? ō)
sore, more, four, coarse—	oə (? ô)
poor, sure—	uə

(1.) Expressing the first element of the diphthong as in the last section.

(2.) Herschell *(Sound*, par. 361) reckons this as a pure diphthong, and says "*young*, *yea*rn, h*ea*r, h*e*re, consist of ĭ succeeded by ɐ̱ more or less rapidly." In these words we believe that the real combinations are yɐ̱, yɐ̱, iə, iə, respectively.

The words *far*, *for*, and *fur*, which are theoretically pronounced faər, fōər (or fâr, fōr), fe̱r, are, in the south of England, indistinguishable from fā, fō, fe̱, because the *r*, as before mentioned, is not pronounced. Thus, in Mr. Dickens's *Pickwick*, we meet with a "Count Smorl Tork," whose name is clearly meant to be pronounced like "small talk," in which manner most Londoners would unhesitatingly pronounce it. The letter l (in *talk*, for example) is avowedly omitted; ? when shall we allow that r is omitted in such cases. It would be a great advantage to retain it, but this, we fear, is impossible. "Short" and "thought" *will rhyme* to the ears of the southern, whatever pains be taken to inculcate that they should not.

It is necessary that the quasi-diphthongs should be recognized in writing, as will be seen by the following comparisons :—

*æ*ra, *e*radicate = iərə, īrădikēt.
dear, dire (fr.) = diər, dīr.
hehr (ger.), herr (ger) = ʜēr, ʜêr (or ʜeər).

Mr. Smart asserts that *payer* rhymes with *stare*, *slower* with *lore*, *brewer* with *poor*.(3) The incorrectness of these assertions will be, perhaps, best shewn by hitching these words into couplets, as in the following doggrel verses :—

> "A pretty man to call himself a brewer,
> And sell such stuff as this! so weak! so poor!"
> "Pray, calm yourself, my friend; speak softer, slower;
> You know you are not read in brewing lore."
> "Drink, and not speak!" quoth t' other, with a stare;
> "But I've a right, I *have*, for I'm a payer."

If the reader does not find the rhymes in these couplets extremely defective, his pronunciation must be very different from ours, and from what we have generally heard. *We* should write the final words thus, brūər, puər, slo̱ər lôr (or loər), stêr pēər; brūər, slo̱ər, pēər being dissyllables, and puər, lôr (or loər), stêr monosyllables. It would be false policy, when it can be so easily avoided (and *is* by many persons avoided), to confuse *lower* with *lore*; *mower* with *more*; *sower* with *sore*; *seer* (a prophet) with *seër* (one who sees); *fear* with *feër* (one who *fees*); *pear* with *payer*; *prayer* (one who prays = prēər) with *prayer* (the words used in praying = prêr); *lair* with *layer*, and such like, as Mr. Smart recommends.

(3.) *Pronouncing Dictionary*, Principles, par. 134. He adds, also, that *liar* rhymes to *hire*, *flower* with *hour*, in which we agree with him; but then he also says that *suer* and *cure* rhyme, which is against our feeling. These instances are not mentioned in the text, because they are properly triphthongs, and, therefore, belong to the next section.

SECTION 4.—*On Triphthongs.*

TRIPHTHONGS result from the confluence of three vowels. Proper triphthongs are formed from proper diphthongs by prefixing those modified sounds of *i* and *u*, which have here been denominated the coalescents, y and w. These triphthongs are, then, double diphthongs, the intermediate vowel combining with the preceding as an improper, and the succeeding as a proper diphthong. Proper triphthongs are not of common occurrence; they are, perhaps, all to be found in the two following tables :—

Table of Proper Y Triphthongs.

EXAMPLES.	SYMBOLS.
m*iei* (it.)	yēi
*yay*n (Hebrew)	yāi
*yoi*cks (hunter's cry)	yōi
*yow*l (growl) ; *jau*chzen (ger.)	yau

Table of Proper W Triphthongs..

EXAMPLES.	SYMBOLS.
guai	wāi
*wi*ne (a common English triphthong)	wai
s*uoi*, t*uoi* (it.)	wo̱i
wow, *wou*nd (past tense of *wind)*	wau(1)

Improper triphthongs are formed by adding a vowel to the end of a proper diphthong. In this case, the intermediate vowel *i* or *u*, forms a proper diphthong with the preceding and an improper diphthong with the succeeding vowel. These triphthongs are most common in French, where they are frequently occasioned by the omission of what is termed the *l mouillé.* In order to prevent any ambiguity in representing them, it will be convenient to write iy and uw for the intermediate vowels respectively ; thus, ko̱nseiyē for ko̱nseilyē *(conseiller).* In the following examples the *l mouillé* is assumed to have the effect just mentioned, which is that usually heard at Paris.

(1.) If wh be regarded as=HW, according to the general view, *whew* would=Hwiu (not Hwyū, which is, perhaps, an impossible combination), and we should have an instance of the triphthong wiu ; but as, in this work, wh is considered a separate letter, we have *whew*=whiu, or whyū, with only a diphthong. *Whew* is no proper word ; it is only an attempt to imitate the sound of *whistling* by letters, and would be better written fhiu, or fhyū, as will be shewn hereafter. The present master of Trinity College, Cambridge, is called *Whewell.* As may be imagined, this extraordinary collection of letters has given rise to the most various pronunciations ; the junior members of the university mostly pronounce it Hyūil, or Yhūil, or Yūil, the senior members generally say Wūəl, or Whūəl.

Table of Improper Y Triphthongs.

EXAMPLES.	SYMBOLS.
con*seiller* (fr.)	eiyē
aïeux (fr.)	āiyẹ̬
quinc*aille* (fr.)	āiyə
v*oyons* (fr.)	o̱iyoṉ (or wāiyoṉ ?)
n*oyeau* (fr.)	o̱iyo̱ (or wāiyo̱ ?)
m*ouillé* (fr.)	uiyē
ess*uyer* (fr.)	úiyē
t*uyeau* (fr.)	úiyo̱

No instances of "improper *w* triphthongs" are known to us.

The term "triphthong" can only be applied to such cases in a very wide sense,—that of three concurrent vowels modifying each other's power,—for in each instance given in the above table the improper diphthongs form *two* syllables, and therefore cease to present what is generally considered the characteristic of triphthongs. It is, however, convenient, for the sake of classification to retain this appellation. In the English word *royal* we have *sometimes* a triphthong of this kind = rōiyəl; but many persons pronounce rōiəl without interposing the coalescent y.

From the quasi-diphthongs are formed quasi-triphthongs by prefixing y or w. They fall into two classes as under.

Table of Quasi Y Diphthongs.

EXAMPLES.	SYMBOLS.
*yea*r	yiə
*ya*re	yeə (? yê)
*yo*re	yoə (? yô)
*you*r(2)	yuə

Table of Quasi W Diphthongs.

EXAMPLES.	SYMBOLS.
*wei*rd	wiə
wear	weə (wê ?)
oie (fr.)	wōə (?)

We class this French sound *oie* as a triphthong, because, after bestowing great care in analysing it, we are fain to consider it as such. The French themselves call it a *diphthong* and do not recognize the presence of w. According to Rapp (*Phys. d. Spr.* vol. 3, p. 127,) there are three sounds of this diphthong *oi*, or rather four; the first in *moi*, the second

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(2.) Distinguish *your*=yuər, from *ewer*=yūər. The first consists of *one* syllable, the second of two.

in *poil,* the third in *voir*, and the fourth in v*oy*ons. The component parts of the sound in *moi* he considers to be *oa,* coalescing in such a manner as only to form one syllable, which to us appears impossible without placing the accent on *a* and converting *o* into w, whereas he retains the accent on *o*. The very attempt at executing this vocal feat causes us to say wōə, thus *moi, toi, roi, joie, foies* = mwōə, twōə, rwōə, zhwōə, fwōə. In the second sound, as in *poil,* Rapp considers the elements to be *oá* as before, but *the accent to fall upon the second letter.* Now, as before observed, the attempt to make *o* coalesce with a following vowel produces the same result as the attempt to make *u* coalesce under the same circumstances, that is, it generates the coalescent w, hence *oá* pronounced in one syllable with the accent upon the second must give w*á* if short and wà if stopped; and in fact this amounts to the sound usually assigned to *oi* in *poil;* and in v*oi*r the only difference is that the á in w*á* becomes long and = â or ā, and this is what Rapp's distinction amounts to also. Hence

poil, soi*f, boîte, coeffe, coasse* = pwàl, swàf, bwàt, kwàf, kwàs;
and *voir, noir, croîre, victoire* = vwār, nwār, krwār, viktwār,

unless â be substituted for ā as more correct. In such words as *voyons* the case is again different, for the *oy* = *oii* according to the French theory, hence voyons = vo̱iyoṉ, and no w intervenes. In Sect. I., we instanced *besoin,* in which *oin* had the sound wiṉ. The French *oi* then (including *oy* = *oii*) has five values;

first = wōə	as in	*moi* = mwōə
second = wà	,,	*poil* = pwàl
third = wā or wâ	,,	*voir* = vwār or vwâr
fourth = o̱i	,,	*voyons* = vo̱iyoṉ
fifth = wi	,,	*besoin* = bĕzwiṉ(3)

In concluding this chapter we cannot but point out to our readers the very unsatisfactory nature of many of the results. The vowel theory is, as was before observed, beset with a number of difficulties owing to the peculiarly subjective nature of the sounds to be discussed. Now a diphthong consists of two vowels which are both liable to subjective differences. It is, therefore, not to be wondered at that such great diversity

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(3.) In a private letter from Mr. T. W. Thornton, in Paris, he says, "The French moi, poil, poêle, voir, voyons are=mwa, pwal, pwāl, vwār, voyon, or vwayon, with the *a* of *father*, but inclining to that of *fall,* which they have not yet quite reached, but probably will before long." In our character these sounds are, therefore, esteemed by him to=mwâ, pwàl, pwâl, vwâr, vo̱iyoṉ, or vwāiyoṉ. This is by far the *simplest* view of the subject.

of opinion is found to exist with respect to their union. We believe that many diphthongs which are thought to be the same are, in reality, very different, and consequently are differently analysed by different writers. It is upon no other grounds that we can understand the essential differences in the modes of forming the diphthongs ai, au, given by various writers. Our present end will be gained if we have succeeded in pointing out the peculiar difficulties of this division of our subject, and inciting others to labour at their solution.

CHAPTER 7.—ON THE BREATHINGS.

THE very essence of all the sounds, whose modifications have been considered in the preceding pages, is the emission of breath. The breath, however, may be expelled with very different degrees of force, and the only difference in the resulting sounds will be in intensity, provided care be taken that no unvocalized breath escapes before the vowel sound is heard—that is, that the emission of breath should be coexistent with the formation of the vowel. If the breath heard is whispered before the vowel sound itself strikes the ear, the vowel is said to be *aspirated* or *breathed*, and this circumstance is here denoted by prefixing the symbol ·h, or h (·h being used when a consonant precedes, and h in other cases)(1) to the aspirate vowel. The symbol ·h, or h, then, directs the production of a sound which is not vocal, but which is due to the sudden passage of the breath previously to the utterance of a vowel.(2) The parts of the mouth do not approach one another nearer than they would for the vowel which is upon the point of being pronounced, so that it would be incorrect

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(1.) In the former chapters of this work H is employed instead of h and ·h, and the dot on a level with the top of the line was reserved for the accent. As the work has advanced through the press, we have become convinced that it will be, upon the whole, most convenient to have two signs for the aspirate, one, ·h, to be used only after consonants or other marks of breathing, and the other, h, in all other cases. By this contrivance, h, after a *consonant*, will still remain a disposable sign, and may be still justly employed as a mere diacritical mark; and thus the present orthography may be more nearly preserved, while it is, at the same time, legitimatized. The reader is requested to alter all the former instances in which H occurs in words printed phonetically into h or ·h, according to this rule. The usual acute accent must be substituted for the inverted period after accented syllables.

(2.) In so far it partakes of the nature of a *hiss*. This is of etymological importance, for this breathing often interchanges with s, as in the Greek ἕξ=heks, Latin *sex*=seks; Greek ἕπτα=hept*a*, Latin *septem*=septiṉ. (?)

to call ·h, or h, a consonant, as it is without the characteristic of consonants—contact. Let it be termed a *breathing;* and, in order to distinguish it from the method of breathing by which the sound is produced simultaneously with the breath, let the former be termed the *hard* breathing, and the latter (which may be theoretically represented by ɥ—an inverted h) the *soft* breathing. According to the phraseology of grammarians, the first is the *spiritus asper*, and the latter the *spiritus lenis*. This preceding breath, or *spiritus asper*, may, however, be moderate or violent. In the latter case, it will require a very evident exertion of the lungs to produce it, and the result may be termed the *strengthened* hard breathing, and represented by H.(3) This sound is very common in oriental languages, but it is also found in provincial and erroneous pronunciations of European languages; thus, in Florence, where the Tuscan language is, in most other respects, very beautifully spoken, the k is, by the great body of the people, pronounced H, thus, Hôz*a*, Hàm*era*, Ho̭nfr·ho̭nt·h*o* being said instead of kôz*a*, kàm*era*, ko̭nfro̭nt*o* *(cosa, camera, confronto.)* In the last word another error is perceived; it is the introduction of an ·h before every o̱ or o̭ in a word. These two errors make the Italian of Florence very difficult for foreigners to understand. In London, where the hard breathing is frequently omitted where it ought to be heard, the strengthened hard breathing is often substituted for the soft breathing, and this will be more certainly the case if the speaker feels at all nervous or flurried; and thus we may often hear a person speak of his Hai or Hŏnər, meaning his *eye* or *honour*.

Besides these most important modifications of the breath in uttering vowel sounds, there are two others which must be noticed, although the first has been generally overlooked by grammarians, and the second only occurs in oriental languages. In listening to English as it is commonly spoken, it will be found that the discourse goes on, apparently unbroken, in a species of *continuous* tone,(4) by which expression we do not imply any approach to monotony, but that there is an absence of jerks and starts. The reason of this is, that there are few marked cases of hiatus. On the other hand, if we listen to German, we shall find the tone of conversation full of hiatuses, or little starts and jerks of the voice, which produce an abruptness in speaking. There are some who show this abruptness more than others, and it is, of course, the aim of a good

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(3.) As this symbol was, in the former chapters, used for the simple hard breathing, the attention of the reader is again drawn to this change of notation.

(4.) Not absolutely continuous, or there would be no articulateness of speech. All that is meant in the text is, that the several articulations are not violently separated; to recur to the violin as an illustration, the notes are played *legato*, not *staccato*.

speaker to avoid such unpleasantness in his delivery. A very similar effect is produced in English by the omission of ·h when it ought to occur; thus, mai aus, for mai haus *(my house.)* In Arabic there is a letter, which we shall hereafter denote by q, which, in many provinces, as about Aleppo and Damascus, in which Arabic is spoken, is never pronounced, the hiatus being substituted for it. One of our Arabic masters(5) insisted that it was only the Christians who pronounced the q, and that *all* Mahometans substituted the hiatus.(6) We shall represent this hiatus by 0, or *Zero*, the proper mark of omission. The Arabic hămz*a* is related to this hiatus, and also to the peculiar Semitic sound which may be properly, called the *compression*, and which is produced thus: previously to uttering a vowel, the throat is violently compressed, so that the vowel is *bleated* out, very much like the sound uttered by a sheep. This sound may be conveniently represented by ɔ (an inverted c), thus, ɔāin, which is its Arabic name. In Hebrew, as pronounced by the Portuguese Jews, this breathing has been converted into the guttural nasal ɴ; and in the English pronunciation of Hebrew and Arabic it is entirely omitted. It is to the Arab an easy and common letter, though very difficult of execution to the European.

We have now distinguished five different ways in which the vowel sound may be uttered, distinct from consonant modifications, hereafter to be considered; but, as yet, we have only considered their initial, and not their final effect. When the vowel sound terminates in the usual quiet manner, as in the word *me*, it may be said to conclude with the *soft* breathing =mīq; but if it is followed by a long-continued whisper, as in *ah!* used as an expression of pain, it must properly be said to conclude with the *hard* breathing, and this interjection must be written āh! If the whisper is produced by a violent exertion of the lungs, as in groaning, the strengthened hard breathing is the one heard, thus, āʜ! If the word

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(5.) Abdullah Cooree (=ɔàbdŭllāh Kūrī, or Qūrī), a native of Aleppo, and secretary to the Archbishop of Tripoli, who visited England in 1842.

(6.) Volney, *L' Alphabet Européen*, p. 165, note, says, "In a part of Syria, and especially at Damascus, Beyrouth, and Acre, q is replaced by a species of hiatus which is very disagreeable to the ear, and produces equivoques which are peculiarly embarrassing to a stranger. I find an example of this in the travels of *Hornemann*, in Africa, translated in 1803, under the direction of M. Langlès. This professor says, p. 42, in a note, 'The site of ruins of Syouah [?=Sīwā], is called *oûmmebeda* [?=ūm*e*bēd*a*]. This word has an Arabic form, but we cannot tell whether it signifies a *vast site* or a wonderful country.' I reply that it is simply *quom el baida* [qūm ĕl bēd*a*], signifying a *white hill*, or *hillock*, which is the precise definition of the spot given by *Hornemann;* but this professor pronounces according to the custom of Damascus, and suppresses the qâf (q)."

terminate abruptly, as if it were only half uttered, as when a person, suddenly entering a room, and beginning to say something, as he opens the door, stops suddenly upon perceiving an unexpected stranger, the hiatus is employed; thus, hăv yū sī0, for hăv yū sīn . . . In our present system of writing, this abruptness is usually expressed by a dash ——, or points . . . .(7) Finally, the compression may also end a syllable, as well as begin one. The cry of the sheep illustrates this in the best manner. This cry is really ɔaɔ, ɔaɔ, ɔaɔ, or ɔaɔaɔaɔ. It is necessary to observe a sheep carefully to detect this, as we are all so strongly impressed, from childhood, that the cry of a sheep is bāā, or māā, that the observer is very likely to be misled. But a sheep generally commences his cry with the *mouth open*, and it is impossible to pronounce m or b without closing the mouth; so that neither m nor b can be pronounced by the animal in general when it cries. Sometimes, however, it opens its mouth at the commencement of the cry, and then a slight, but imperfect, effect of m or b is produced. It may seem strange to dwell at such length upon the cry of an animal, but it happens that there is a line preserved of an old Athenian poet, Cratinus [=Krətainɐs], which says,

ὁ δ' ἠλίθιος ὥσπερ πρόβατον βῆ βῆ κράζων βαδίζει.(8)
"The fool goes crying βῆ, βῆ, like a sheep."

And this line has been generally quoted to shew that the ancient Greeks pronounced β like our b, "because the cry of a sheep is bē, bē!" and that, therefore, the moderns are quite mistaken in pronouncing this letter like v (or, according to Dr. Rapp, like vh.)

As the hard breathing, when it succeeds a vowel, causes a whispered prolongation of its sounds, it has been customary, in some languages, especially in German, to use the symbol employed for the hard breathing, when placed after the vowel, as a mere sign of prolongation, and in this manner distinguish the long from both the short and stopped vowel. In German the symbol h is employed for this breathing, and the following are examples of this use of it:—

(7.) As an instance of the hiatus, we may quote the death of *Whiskerandos*, in Sheridan's *Critic*, Act 3, Scene 1:—

"Whĭskərăndŏs.—̧Oh, kɐrsĕd păr*i*!—dhăt lăst thrɐst ĭn tiərs
Wŏs fētəl.—Kăptĭn, dhau hăst fĕnsĕd wĕl!
And Whĭskərăndŏs kwĭts dhĭs bɐslĭɴ sīn
Fōr ōl *i*tɐ0—
Bĭfītər.—n*i*t*i*,—hī wŭd hăv ădĕd, bɐt stɐrn dĕth
Kɐt shōrt hĭz bīĭɴ ănd dhə naun ăt wɐns."

(8.) =Hǫ dīlĭthiŏs hǫspər prŏbətŏn bī bī krēzǫn bădaizai, at Eton; or, ǫ dhīlĭth*i*ŏs ŏsper prŏv*a*tŏn vī vī krăzŏn v*a*dhīzī, in modern Greek.

COMMON ORTHOGRAPHY.	PHONETIC VALUE.
innen ihnen	ĭnən īnən
senne sehne	zĕnə zēnə
manne mahne	mànə mānə
wonne wohne	vhŏnə(9) vho̱nə
bulle buhle	bŭlə būlə(10)

The following are examples of the occurrence of the breathings :—

INITIAL.

Name.	*Symbol.*	*Key word, common spelling.*	*Key word, phonetic spelling.*
Soft breathing	ɥ	ee (Scotch) ; ay (yes) ; à (fr.)	ɥīɥ, ɥēɥ, ɥāɥ
Hard ,,	h	*h*e ; *h*ay ; *h*a !	hīɥ, hēɥ, hāɥ
Strengthened hard ,,	ʜ	casa (Florentine) ; ʜamd (Arabic) ; my (h)eye	ʜāzaɥ, ʜàmd, maiɥ ʜaiɥ
Hiatus	0	my ’ouse ; the ’ill	maiɥ 0aus, dhīɥ 0il
Compression	ɔ	Ali ; Othman	ɔâlīɥ, ɔŏthmân

FINAL.

Name.	*Symbol.*	*Key word, common spelling.*	*Key word, phonetic spelling.*
Soft breathing	ɥ	me ; my ; may	mīɥ, maiɥ, mēɥ
Hard ,,	h	ah ! Shah (Persian)	āh, shāh
Strengthened hard ,,	ʜ	naʜnu (Arabic)	nāʜn*u*ɥ
Hiatus	0	for all eter—	fōr ōl *i*tɐ0
Compression	ɔ	Saadi (Persian poet)	sāɔdīɥ

There is no occasion to write ɥ, which must be understood *before* every word commencing, and *after* every word terminating in a vowel; thus we may write ī ē ā, hī hē hā, ʜāz*a*, mai ʜai, dhī, ɔâlī, mē, saɔdī, simply, instead of the more complex forms above employed.

CHAPTER 8.—ON THE SIMPLE CONSONANTS.

UP to this point, the reader's attention has only been drawn to the voice as modified by different degrees of intensity of utterance or different degrees in the size of the aperture through which it has to pass. We have now to take account of the alterations produced by entirely or almost entirely closing up this aperture. The general nature of these modifications has been already sufficiently displayed (chap. 4), it only remains to

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(9.) Or vhǫnə. In some parts of Germany, ǫ, in others, ŏ, is used as the stopped vowel corresponding to o̱.

(10.) "It is observable that the h of prolongation is only used before the four liquids, l, m, n, r. The word *Fehde* is a solitary exception, to which we may add the inflexions *naht*, *geht*, *seht*, &c.; while in all radical words the th of prolongation is used instead of ht."—RAPP, *Phys. d. Spr.*, vol. 4, p. 49.

examine the specific action and effect of each in particular. A consonant was, in effect, defined to be "the arrangement or ajustment of the different parts of the mouth, amounting to a total or almost total closure, so as to produce certain modifications of the vowel sounds," and a consonant sign as "the symbol which directs that such arrangement or ajustment should be made." In chap. 2, it was remarked that there are two modes in which the action of the mouth may take effect, either immediately on the voice as issued, or mediately on a preceding whisper. In treating of the breathings in the last chapter, it was stated that the hard breathing was nothing but the whisper preceding the vowel, and thus the vowels might have been also divided into *spoken* (those preceded by the soft breathing in which the voice is consequently immediately evident), and *whispered* (those preceded by the hard breathing). To this classification we might add a list of *strengthened* vowels, *spoken* when preceded by the compression, and whispered when preceded by the strengthened hard breathing. The vowels might also have been subdivided into *explosive* (preceded by the hiatus or compression) and *continuous* (in all other cases); so that those preceded by the strengthened hard breathing would be strengthened continuous vowels, and those preceded by the hiatus would be strengthened explosive vowels.

This would have been upon the supposition that the breathings were taken to be essential parts of the vowels, which they have not been, as the plan here adopted was considered clearer. We have, however, been induced to offer this classification in this place by way of preparation to that of the consonants, some of which are explosive and others continuous, while both classes may be strengthened or *weakened*, a species of modification which must be reserved for subsequent explanation. Each class may again be subdivided into spoken and whispered. We shall first consider the spoken consonants or immediate modifications of the voice, then the relative weakened consonants, next the strengthened consonants of both kinds, and, lastly, the whispered consonants of both kinds; the consonants not belonging to either the strengthened or weakened class, may be called *natural*, by way of distinction. There are two other heads under which the consonants may be arranged, namely, *oral* and *nasal*, according as the breath is forced through the mouth or the nose.

SECTION 1.—*On the Spoken Consonants.*

IN order to produce the effect of a consonant at *all*, the parts of the mouth must come into contact, or very nearly so.(1) The only flexible

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(1.) This must be accurately understood. When they are said to come *very* portion of the mouth which is absolutely double is the lips, and at least one consonant can, therefore, be formed by them alone. A lip may also be brought into contact with one of the rows of the teeth, but as a general rule it will only be found possible to bring the *lower* lip against the *upper* row of teeth. Such consonants as are formed by the aid of one or two lips, may be called *lip consonants*, or *labials* (Latin *labium*, a lip). In order to produce the other consonants, it is the tongue—that most pliant part of the mouth—which comes in contact with some other portion. So important is the part played by the tongue in speaking, that it has been long regarded as *the* organ of speech in particular. From the Latin word *lingua* (the tongue), is formed the common word *language*, to denote an assemblage of spoken sounds representing a series of ideas, and even still frequently called a "tongue" simply. In designating those consonants which are not labial, it will be convenient only to name that part of the mouth with which the tongue comes in contact in order to form them, and to omit special mention of the tongue, because its assistance is indispensable for the origination of any such contact. The tongue may touch any portion of the palate, but we shall only consider two points —one near the throat, and one intermediate to this point and the teeth; the corresponding consonants may be termed *gutturals* (Latin *guttur*, the throat), and *palatals* (Latin *palatum*, the palate). Three places of contact—the lips, palate, and throat—are thus distinguished, and each point may be sub-divided into three, with the names of *outer*, *middle*, and *inner*, thus giving nine places of contact. Each of these may be divided into three, by prefixing pre or post, as pre-outer, outer, post-outer; but, as this division would be too delicate, it will suffice to establish intermediate points, and name them thus, "outer-middle palatal contact"—a contact between the outer and middle palatal; "palato-guttural contact"—one between the inner palatal and outer guttural, &c.; eight intermediate points are thus determined, making 9+8=17 points on the whole. No cases occur in which the tongue projects beyond the teeth; such contacts, if they occurred, might be termed lingui-dental, or lingui-labial.

The contact may be complete, or incomplete. In the first case, the vowel sound is heard, after the initial consonant, as a sudden burst, or *explosion*, and these consonants may, therefore, be termed *explosives*. In the second case, the final consonant does not cut off the vowel completely, but allows its sound to *continue* any length of time; such conso-

nearly in contact, the two parts are absolutely brought into contact; but, owing to the flexibility of one of the contingent parts, the air is able to force a passage for itself by beating down one side of the valve which opposes its progress.

nants may be termed *continuous:* they are either *sibilants* (Latin *sibilans*, hissing), or *trills* (vibrating).(1 b)

In the classes hitherto referred to, the vowel sound, which is modified by the consonant, passes through the *mouth*, and, therefore, such consonants are termed *oral* (Latin *os*, *oris*, the mouth); if the breath be allowed to pass through the *nose*, the consonant becomes *nasal* (Latin *nasum*, the nose). All nasal consonants are also continuous. The following, therefore, will be a natural division in which to treat the spoken consonants:—

I.—ORALS. 1.—Explosives.
2.—Continuous; 1′ *Sibilants*, 2′ *Trills*.
II. NASALS. Continuous.

The consonant may produce its modifying effect either upon a succeeding or preceding vowel. In the former case it is said to be *initial*, in the latter *final*, which terms only relate to its position with respect to the vowel, and have no reference to its place in the word. The initial may immediately follow the final effect, and then two cases must be distinguished; either the two effects are *continuous*, so that one ceases at the very instant that the other commences, or *discontinuous*—a sensible pause elapsing between the final and initial effects. In the former case, the consonant is said to be *medial*, in the latter *double* (or *dinounced.*) These four values of a consonant are important, not merely in a phonetic, but also in an etymological point of view, and they must be, therefore, carefully distinguished. The relative position of the vowel and consonant signs is, in general, sufficient to determine when the consonant has its initial, medial, or final effect; the consonant character may be doubled for the double effect.

I.—ORALS. 1.—Explosives.

B, b.

Let the edges(2) of the lips be tightly compressed, and the larynx pre-

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(1 *b.*) The word *trill* is related to the German *drillen*, *drielen*, *drehlen;* Dutch, *drillen;* English, *drill*, *thrill;* Anglo-Saxon, *thirlian;* Danish, *drille;* Swedish, *drilla*, *trilla;* Italian, *trivellare*, and may, in common with many other words, be traced to the root r—l, (the palatal t or d being prefixed,) which we find in *roll*, *reel*, *rill*, and the simplest form of which is —l, as in Sanscrit *il* (to move quickly); and Greek, *eláō*, *iállō;* German, *eilen*. See Kaltschmidt, *Sprachvergleichendes Wörterbuch*, v. *drillen*.

(2.) It is necessary to attend to this circumstance, for if the interior part of one lip be pressed against the outer edge of the other the effect is different, the consonant vh being produced.

pared to form a vowel sound, as ā; then let the lips be quickly opened to the extent required for the pronunciation of that vowel. By this arrangement there will be a sudden change of the ajustment of the mouth from the consonontal to the vocal position, but the voice will be heard immediately upon the opening of the mouth and *during the period of the change of ajustment*, while, when the ajustment is completed, the vowel ā only will be heard. By this means the commencement of the vowel ā will be very sensibly modified, and will, in fact, be unlike the real sound of ā. This alteration of the sound is due to the previous ajustment and to the continuance of the voice during the change of ajustment. The altered sound is *not* the sound of the consonant—that is, of the ajustment, which has no sound—but the sound *due to* the consonant; and in this sense, and this only, can we say that the spoken consonant is pronounced, or has a sound. In the present case, the consonant is symbolized by b, which must be regarded as a direction to perform the somewhat complicated action, just described, previously to the sound of the vowel; and bā (the consonantal being written before the vowel character) will express the modified sound as heard in consequence of this action, in which the vowel ā is preceded by the initial value of the consonant.

In order fully to appreciate the effect of this action, it is necessary to try it upon several different vowels, as in the following words, in pronouncing which the reader is requested to disregard the letters which, in the phonetic transcript, are separated off by hyphens :—

bee, bay, bah! bought, burr, boat, booby, by, boy, bow,
= bī, bē, bā, bō-t, bɐ̱-r, bo̱-t, bū-b*i*, bai, bōi, bau.

Let the vowel ē be sounded, and without ceasing to try to sound it, let the reader bring his lips together and tightly close them at the edges. In this case the conclusion of the vowel sound will be modified, instead of the commencement. The modified sound thus produced is due to the final consonant, and may be called the final value of the consonant, care being taken that this expression is not supposed to imply any real sound in the consonant itself. The whole sound heard in this case is symbolized by ēb, the vowel character being written first. The word *babe*=bēb, contains an example of both the initial and final values of b. Other examples of the final value of b are furnished by the words *glebe, lobe, bribe*=gl-īb, l-o̱b, br-aib.

Let the reader try to prolong the sound of the word bēb. He will find it impossible to sustain the sound beyond a very short time, which time, however, will be sufficient for him to feel a *tremor of the lips*, occasioned by the partial escaping of the voice, which forces its way through the closed lips. As, however, the lips must be very tightly compressed to form b, the compression very soon prevails, and, in comparison with what happens when the consonant is one of the class termed continuous, the sound may be said to be *suddenly* cut off. In the same way, although not so perceptibly, the initial consonant is not purely explosive, because the voice really forces its way through the compressed lips for a a very short time before the lips are opened. These remarks apply equally to the letters, d and g, subsequently considered. The fact that the explosive character of these spoken consonants is not perfect, becomes of importance in the construction of syllables.

D, d.

Let the tip of the tongue be pressed firmly against the extremity of the gum where it joins the palate, and let the vowel ā be immediately sounded, the ajustment of the mouth being, of course, changed, as was explained in the case of b. The result will be a modification of ā, different from that just symbolized by bā, and arising from the initial value of the consonant. The consonant itself is symbolized by d, and the result, therefore, by dā. The following are examples with other vowels :—

deed, *day*, *dart*, *daw*, *dirt*, *dough*, *do*, *die*,
= dī-d, dē, dā-rt, dō, du̱-rt, do̱, dū, dai.

The final value of d will be produced by first sounding a vowel, and then closing the aperture of the mouth by bringing the tip of the tongue in contact with the palate near the gum. The first example *deed*=dīd, contains both the initial and final values of d. Other examples of its final value are

heed, *aid*, *hader* (ger.), *awed*, *owed*, *rude*, *sued*, *eyed*,
= h-īd, ēd, h-ād-ər, ōd o̱d, r-ūd, s-yūd, aid.

G, g.

Let the back of the tongue be brought close against the soft palate just at the entrance of the throat, and the vowel ā be prepared and sounded as soon as the breath is able to pass. The modified result is written gā, and is due to the initial value of g. The following are examples :—

geese, *gay*, *gew-gaw*, *go*, *goose* = gī-s, gē, gyū-gō, go̱, gū-s.

For the final sound, which the reader will now be able to produce without difficulty, the following examples will suffice,

plague, *fugue*, *Bogue* = plēg, fyūg, bo̱g.

In the examples cited as illustrations of the values of these consonants only long vowels occur, and they prove that the long vowels may be modified both by initial and final consonants. All medial values have been guarded against by the use of hyphens to separate the consonants off. If, however, such a word as *baby* be taken and written bēb*i*, it is manifest that the second b may have two values, the first arising from the preceding ē, and the second from the succeeding *i*. There is no *necessity* for the second b having these two values, for the reader will find upon experiment that he is able to say either bē-b*i* or bēb-*i*, in the first of which words the second b is initial, and in the second final only. It is, however, easier and commoner in such cases to give the consonant its medial value.

Let us, however, take another case: let us try to pronounce a short vowel before a consonant so as to produce a final effect. We shall soon find that on account of the essential brevity of the short vowel, we cannot effect this, but upon making the attempt we convert *the short into a stopped vowel*,(3) in which we only distinguish so much of the original vowel as to be sure what it is, and the rest is *all* due to the final value of the consonant. This circumstance will, perhaps, serve to give the reader a clearer idea of the stopped vowel than any thing we have been hitherto able to advance, and will shew its intimate connection with the short vowel, whose relation in turn to the long vowel presents no difficulty. This case also shews how it has come to pass that the short and stopped vowels have been considered identical by almost all writers. If, for example, the syllable "b*i*g" were written, it would be almost impossible to pronounce it otherwise than "bĭg," but the case is quite different in the word "b*i*gin," which may be pronounced b*i*-gĭn (as in the word *begin*), for in this case it is not necessary to give g its final effect; but if we attempt to make g final, we shall say bĭg-ĭn, with the final g, or bĭgĭn with the medial g (as in the Scotch word *biggin*, for *building* or *digging*). When, then, the consonant sign occurs between two vowels of which the first is short, it has only its initial value, and not its medial effect; if the first vowel is long, the consonant may have either of its three values; but if the first vowel is stopped, the consonant can only be final or medial, and is more frequently the latter in each of these two last cases.

The above considerations afford a solution of a difficulty in orthography, which has evidently been felt by the inventors of the system which we at present employ. When a consonant occurred between two vowels, they heard its medial effect, but when the preceding vowel was long they were able to separate it from the consonant without producing any very marked injury to the sound of the word, as bē-b*i* (*baby*); when, however, the first vowel was stopped, it could not be separated from the following consonant, while the initial effect of the consonant upon the succeeding vowel

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(3.) The vowel ə, which is the representative of the pure voice as nearly as possible, is an exception to this rule. It *may* either remain short, or be converted into the stopped vowel. If accented, it *must* be stopped, or else made long.

was so evident that they could not avoid taking the consonant with that vowel also; the consequence was, that it was taken with *both*, and repeated in writing, thus *biggin*, for bĭggĭn, so that doubling the following consonant became the regular way of intimating the *shortening* (as it was called) of the preceding vowel, that is, the mark of the preceding vowel being stopped. But the removal of this difficulty only occasioned the encountering of two others; it became impossible to distinguish between the long and short vowel on the one hand, and the single and double consonant on the other. In English itself, where very few double consonants really occur (though frequent in the present system of spelling) the latter was not felt as a very great disadvantage, but still it was a disadvantage, because there no longer remained any determinate way of indicating where two consonants were to be pronounced. Many subterfuges were consequently necessary, which, however, do not completely meet the difficulty; while many really medial consonants were left unmarked, as in *cynical*=sĭn*i*kəl, compare *pinnacle*=pĭnəkəl.

In order to perfect our notation for the consonantal modifications of vowels, it would be necessary to have different signs for the initial, final, medial, and double values. Suppose we use b in Roman type, for the initial; *b* in Italic, for the final; and unite them thus, *b*b, for the medial; separating them thus, *b*·b for the double value of the consonant, which only differs from the medial in having the final and initial values separated by a distinct interval of time: we shall now be able to discriminate every case with perfect accuracy; thus, ro̱*b*, bŏ*b*, bŏ*b*bi, bŏ*b*·bau (*robe*, *Bob*, *Bobby*, *bob-bow*(4)). In such a word as ro̱*b*rū*m* (*roberoom*), the ambiguity of any notation in which separate characters are not provided for the initial, final, and medial values, is clearly shown. If the word ro̱brūm were presented to a person ignorant of our language, he might very likely pronounce it ro̱brū*m*, that is, ro̱-brū*m* (instead of ro̱*b*-rū*m*), and most ears would feel this as an error of pronunciation. The error, however, though marked, is still so very slight that it does not appear on the whole advisable to increase the number of signs in an alphabet to so great an extent as would be required for the avoidance of all ambiguity. The example above given serves to point out one natural means of learning how to separate the syllables (and upon the separation of the syllables necessarily depends the position of the different consonantal effects) derived from a knowledge of the language; it is, that in compound words, each component should be kept apart in speaking. This, however, is only effectual when the speaker

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(4.) An invented word, signifying that species of *bowing* which, from its elegance, is denominated "*making a bob.*"

is conscious of the composition; thus in *unknown* an Englishman intuitively pronounces ɐ̭*n*·no̱*n*, because he knows the composition of the word; whereas, in *immense*, he generally says *im*ĕ*ns*, because he is not aware of the particle *im* (ĭ*m*) as a separate word. If, however, he wished to *dwell* upon the first syllable, as for the purpose of great emphasis, he would perhaps say, ĭ*m*·mĕ*ns*, separating the syllables, and thus distinguishing the two component parts of the word.

In the following pages the initial, final, and medial values of the consonant will not be discriminated by any particular sign, the mere relative position of the vowel and consonant characters being regarded as sufficient for all general purposes. In a subsequent chapter, the cases in which consonants really receive one or the other value, will be particularly examined. The double consonant will, however, always be distinguished by doubling the consonant sign, thus, ɐ̭nno̱n, so̱llĕs.

I.—ORALS. 2.—CONTINUOUS.

The consonants of the next class are continuous; that is, they may be prolonged for an indefinite space of time, as will be most evident in their final values. They fall into two principal groups, according as the tongue is kept *steady*, or is allowed to *tremble*; in the first case, the sound being forced through a small invariable aperture, produces a *hissing* or *whistling* effect, and in the second case it passes through a variable aperture, and the resulting effect is usually called a *trill*. We shall first consider the *hissers* or *sibilants*, and then the *trills*.

1′.—*Sibilants.*

W, w.

The first consonant belonging to this series is the coalescent w, which has been already considered under the head of "diphthongs," and our reason for treating it in that place will be found there. This, however, is its proper position in the alphabet, as it partakes of all the characteristics of continuous consonants. It is a consonant, because the lips are closed, in a rounded form, more contracted than for the vowel o̱; it is continuous, because the aperture is not entirely closed, the vocalized breath being able to force a way through it. In uttering the following vowel, the mouth of course assumes the form proper for that vowel; the change is least in pronouncing wo̱, and greatest in saying wī, the lips being closely contracted for w and widened for ī. Examples of the occurrence of this letter have been already given; it only has an initial value; when we should expect it final or medial it degenerates into the vowel from which it originally proceeded.

Vh, vh.

This consonant is entirely foreign to our language, but replaces w in German, being derived, by many nations, from ū in the same way as we derive w from that vowel. It lies intermediate to w (or b) and v, (a well-known English letter which will be described next, (and partakes of the nature of both. The lips are placed together, but do not meet at the *edges*, for the lower lip is pressed upwards, in such a manner that its interior surface assumes a convex form and thus meets the internal surface of the upper lip. This consonant resembles w and b, then, in being produced by the lips only, while it resembles v in the shape which the under lip assumes, for if this lip were retracted a little further it would strike the edges of the upper row of teeth, and thus produce v. As may be supposed this consonant, which we symbolize by vh,(5) is easily mistaken for v, for if the lower lip touches the teeth ever so gently, v will be heard.

The Germans insist that their consonant w (or *spirant* w, to use their favorite term) should have this value. Thus Rapp says (*Ph. d. Spr.* vol. i. p. 59,) "the Greeks had not in the olden time the pure *w* (German), but were obliged to represent the Latin *v* by *ου* ; afterwards, as at present among the modern Greeks, the *β* was = German *w ;* thence we may conclude an intermediate sound, and, in fact, such a one exists ; for if, avoiding the *w* (German) which is produced *with the lips*, we execute the same motion between the *upper teeth* and *under lip*, a sound is produced which is not so soft as *w* (German), but has more sharpness and consistency, and which many languages cultivate in order to give an elegant shade to the *w ;* thus the French pronounce the *v* half dental, and the English also, in order to separate more distinctly the *v* from the broader *w*." By "the broader *w*," he means our English *w*, but from several passages in his excellent work he seems unable to distinguish between w and vh on the one hand and w and ū on the other. Again (*ib.* p. 61,) he says : "*w* (German) is produced by approaching, not closing the lips. If we pass beyond *w* [vh] in softening the sound, we come to the English *w* [w]." It shews but a vague knowledge of our w that at one time he calls it a "broader" and at another a "softer" vh. Again (*ib.* p. 254) : "Between the two English sounds [v and w] the common *w* [vh] places itself, as it were the *indifference*, and that was precisely the case with the Roman *v*." Another writer,(6) speaking of the sound of the English v, says :

(5.) Compound in form but single in reality; to express v followed by the aspirate we should write v·h. See remarks on dh a little further on; and chap. 7, note (1).

(6.) VOIGTMANN (Foightmàn) *Aussprache des Englischen*, p. 150. For this, and the three preceding passages from Rapp, we are indebted to Mr. T. W. Thornton.

"The sound of this consonant is generally described as precisely similar to that of the German *w;* but this is not strictly correct, for the English *v* is formed with nearly [identically] the same organs as the *f*, both of them by a pressing of the upper teeth on the lower lip. The German *w*, on the contrary, is formed by a totally different motion of the organs from the German or English *f;* for the German *w* is formed by a gentle pressure of both lips one against the other, whereby the *upper teeth never touch the lower lip*, which is always the case with *v*, . . . *v* therefore = soft [spoken] *f;* our *w* on the contrary is quite foreign to the English, unknown and incomprehensible."

Since both w and vh are produced by the lips alone, and are both continuous, it is easy to confuse one with the other, and they are confused in different parts of Germany. It is also easy to confuse vh with v, for scarcely any Englishman will be able to discriminate them; nay there are few *German* ears which can distinguish between them, and in one part of Germany (Berlin(7)) the use of v for vh is the rule. Mr. Thornton, in a private letter on this subject, says: "I have been in Germany and never discovered any difference between their *w* [vh] and our *v*, which I always pronounced it; but one may live for years among sounds and not notice them." To this testimony we can add our own, for we resided more than twelve months in Dresden, where we were constantly in the habit of associating with Germans and speaking their language, of which we were accounted to have acquired a good pronunciation, and yet we never pronounced the German *w* otherwise than as v, nor in fact knew that it ought to be differently pronounced, nor were we once corrected for saying v instead of vh. The consonant vh as here explained is perfectly pronounceable, but after these experiences, it would be mere waste of labour for a foreigner to endeavour to acquire the habit of pronouncing it, when he is equally well understood, and produces no offensive effect on the German ear, while using v in place of vh.

The existence of this letter is, however, valuable for other reasons. The confusion of w with vh and vh with v, leads us to see why w and v should be confused as they are in London and in most of our English provinces, although Cockneys bear the entire blame. But it is not only Englishmen, who are in fault; Frenchmen and Germans in speaking English continually pronounce v (or vh) for w, a letter which they do not possess. The Turks use v wherever w occurs in Arabic, thus vəzīr (Arabic

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(7.) RAPP *Ph. d. Sp.*, vol. 1, p. 60. "So hat der Berliner Dialekt das eigene, das *w* so *v*mäszig hören zu lassen;" (the Berlin dialect is peculiar in pronouncing *w* [vh] something like *v* [v]).

wəzīr). In Hebrew, as at present pronounced, the letter which corresponds to the Arabic w, is usually called v. The letter vh is also important as being another link in the chain which unites the vowels with the consonants; ū, w, vh, v, b, forming a regular series.

This letter is chiefly initial. It is sometimes found medial as in German *löwe* = le̬vhə, or ? le̬-vhə (or le̬-və); but does not occur final. Even when medial it is scarcely possible to separate it from v, and when final it may be considered as having only a theoretical existence; the Germans not only *say* but *write* b in this case, as *halb* = hàlb, compare English *half*, *halve* = hāf, hāv.

V, v.

Let the lower lip be pressed against the edge of the upper row of teeth, and arrange the larynx for the vowel ā and suddenly open the mouth, taking care that no whisper precedes the vowel sound, which is most easily obviated by allowing a portion of vocalized breath to pass through the imperfectly closed aperture before separating the lip from the teeth, and we shall pronounce vā. If we say ā and then bring the lower lip against the edge of the upper row of teeth we pronounce āv, but we by no means cut off all the sound of ā by so doing, for the teeth cannot enter into such a perfect contact with the lip that there should be no little chinks or crevises through which the voice is at liberty to escape. The reader will, if he make the experiment, easily satisfy himself that the voice in escaping causes a very perceptible vibration of the lip against the teeth. The consonant thus produced we must class as a labial, and it is consequently related to b; indeed the inability which some persons feel (Spaniards for example) to distinguish b from v would naturally lead to the idea that v is only an ill-pronounced b. The relation of v to b is usually expressed by saying that v is the *aspirate* of b. This term is objectionable, because it would imply that v required a breathing in order to produce it, which would make v a *whispered* consonant, whereas it is a *spoken* one; or, if we take aspirate in the sense of *followed by the hard breathing*, (as some Sanscrit letters are) then the term is decidedly incorrect. We recommend its discontinuance. The relation of v to b is that the lips are used in the utterance of both of them, while vh forms the connecting link.

Examples of v:—

veal, vale, eve, have, save, saving, having.
= vī-l, vē-l, īv, hăv, s-ēv, s-ēvĭɴ, h-ăvĭɴ.

The three sibilants just described all belong to the lips; w being produced by the *outer* extreme, vh requiring the internal surfaces of the lips, and v the assistance of the teeth; in other words, w is an *outer*, vh a *middle*, and v an *inner-labial.* They form the ƀ or labial class of continuous sibilant consonants, corresponding to the explosive b.

Dh, dh.

Let the tongue be pressed against the back of the upper row of teeth, near and partly upon the root of the gum, the point of the tongue being directed upwards, so that the *under part* of the tongue is in contact with the back of the teeth. This position corresponds to the consonant which we shall represent by dh. As we have already had occasion to explain (when speaking of wh, p. 80), the sign dh, though compound in appearance, is as simple in reality as ā or ă, each of which consists of two parts, a and the mark above it, the mark having no meaning in itself and only serving to *modify* the meaning of a. In the same way h, when following a consonant,(8) has absolutely no meaning in itself, although it changes the meaning of the consonant to which it is subjoined. Thus d has a determinate meaning already assigned to it; dh has also a determinate meaning differing from, although related to, the former. The reason why this sign has been selected is, that other writers have employed it in the same signification, so that its meaning is well established, while it bears an evident relation to the signs th, sh, which are commonly used in the present orthography of the English language. The error committed in employing this notation, as at present customary, is entirely due to the fact that h after a consonant is *also* employed as the representative of the hard breathing. The letter dh is commonly considered to be the *aspirate* of d, in the same way as v is the aspirate of b. This view of the subject accounts for the notation dh, while h was at the same time looked upon as denoting the aspiration. But dh is really *not* so much allied to d as v is to b. In forming d, it is the *upper* part of the tongue-tip which comes in contact with the *hard palate*, whereas in forming dh, it is the *under* part of the tongue-tip which touches the back of the *teeth.* Dh is more related to z, and we find that foreigners often mispronounce it as z. This is very remarkable in Arabic, because the proper Arabic alphabet contains this letter, and yet many Arabs confuse dh with z. As foreigners in general experience great difficulty in conceiving the pronunciation of this consonant; it may be remarked that the best mode of getting them to imitate it is to tell them to place the tongue *between* the teeth and pronounce z; the result approaches dh so very nearly that the nicest ear may be deceived. The following are examples of dh:—

the, though, they; with, seethe, lathe; lather, father
= dhī, dho̱, dhē; w-ĭdh, s-īdh; l-ēdh; l-ădhər, f-ādhər.

(8.) When *not* following a consonant it denotes the hard breathing; see chap. 7, note (1), p. 91.

Z, z.

As vh may be considered as formed from b by making the contact incomplete, which is effected by pressing the lower lip against the upper and thus forming a pout, so z may be considered as d made incomplete by dropping the tip of the tongue from the palate. If the reader will say də, he will find that his lips are in the precise state for pronouncing zē. This letter is consequently not seldom interchanged with d. The tongue is rather arched, but the two sides are in contact with the teeth, and the tip is free; the breath in passing strikes the palate very near the gums, but further back than for dh. The following are examples:

zeal, *as*, *wheeze*, *his*, *easy*, *mazy*
= zīl, ăz, wh-īz, h-ĭz, īz*i*, mēz*i*.

Zh, zh.

By dropping the tip of the tongue from the position which it assumes for l, and then raising its sides and bringing them into contact with the molar teeth, the tongue will be left in the position requisite for pronouncing zh (the French j). Zh only differs from y in that the centre portion of the tongue between the teeth where the two sides are fixed, is more elevated for pronouncing y than for pronouncing zh. It is consequently at times somewhat difficult to say whether the consonant pronounced is zh or y, and hence the confusion which is so general in many English words between dzh and dy, which when properly pronounced differ very slightly from each other. The zh is only found as a medial(9) in a few English words, and it is observable that in *all* of these words it has arisen from an attempt to pronounce zy, the z causing the primary hissing effect and the y forcing the tongue into the position requisite for zh, or very nearly so; whence the speaker naturally uttered zh as the easier combination. Thus: *pleasure* might have been plĕzyūr, but it became plĕzhūr, and then plĕzh*u*r, and finally plĕzhər, as it is now universally pronounced. Similarly *vision* became vĭzhən. This sound has, therefore, been *evolved*,(10) and was not natural to our language; an Englishman still feels a difficulty in pronouncing it when *initial*. The following are examples:

jamais, *âge*, *je*, *siège*, (all Fr.), *azure*, *treasure*, *lesion*, *vision*
= zhàmê, âzh, zhə, syêzh, ăzhər, trĕzhər, līzhən, vĭzhən.

These three sibilants all bear a manifest relation to d; z itself is a mere incomplete d, dh may be considered as an advanced and zh as a backward z. These then constitute the 𝔡 class of sibilants.

(9.) ? Is it not *final* in *strange hinge*=strēnzh hĭnzh, rather than strēndzh hĭndzh.

(10.) See Latham, *English Language*, § 79, p. 116.

Y, y.

The coalescent y is next to zh, from which it differs in the manner just stated. It has been already sufficiently considered among the diphthongs, but it is repeated here in order that it may have its proper place assigned to it among the consonants. It does not occur final, but where we should expect it final we find ī or *i*, jh or gh. When medial it is only found in the improper triphthongs.

Jh, jh.

The sibilant jh is not at all an acknowledged letter, although its *sound* is frequent in German, where it is expressed by *g* simply as in *berg einig* = bêrjh, ainijh, in the pronunciation of the majority of Germans, although most Germans allow that the theoretically accurate pronunciation is bêrg, ainig. The sound, however, really exists, and is of importance in completing the list of sibilants. It may be considered as a g made incomplete by dropping the tongue. It is necessarily closely allied to y, and also to g or gh, and is therefore the connecting link between the vowel ī and the consonants, as already mentioned; thus, ī, y, jh, gh, g form a continuous series. In order to its evolution in German, it must be preceded by û or one of the ɩ vowels; but in Dutch, gh, and not jh, occurs in such situations, according to Rapp. It is most common in the German termination *ig*, especially when the *i* is cut out by an apostrophe, as *kön'ge* = ke̬njhə.

Gh, gh.

The true gh is a rare consonant, even in German it is generally replaced by the softer jh; but it forms an element in the Russian Alphabet, in which language, however, the speaker continually replaces it by h. It is the value theoretically ascribed to the third letter in the Hebrew Alphabet (gīmel) when not marked with the point doghēsh, and it is generally, but erroneously, supposed to be the sound of the Modern Greek γ (see G among the trills), and of the Arabic *qhayn*, which is in consequence commonly written *ghain* (see qh in sect. 4 in this chapter). The Dutch g is always pronounced as gh (or as kh, the corresponding whispered letter), and it was formerly written gh, which seems to be the established symbol where Roman types are employed, because gh has been considered as the *aspirate* of g; the notation is here retained, but the theory is of course disregarded. The following examples of the occurrence of this sound in Dutch are taken from Dr. Rapp's Work (vol. 3, p. 281); but as he has only given them in their phonetical dress, we can only translate his notations, thus:

	ghàf,	ghêfen,	ghlaiden,	ghro̲t,	dàgh,	dāghen,	bêrgh,	fŏlghen,	fŏlght;
i. e.	gave,	to give,	to slip,	great,	day,	days,	mountain,	follow,	follows.

pronounce a pure stopped vowel before r in such cases. Although we have convinced ourselves that it is possible, and believe that we are ourselves able to pronounce a stopped vowel in this case, yet we do not recollect having heard this sound in the mouths of others. We cannot answer for Scotch and Irish, in which such combinations may perhaps be found, as Scotchmen and Irishmen are apt to say sɐ̭r for sɐ̱r *(sir)*. When indeed the r is strongly trilled there is always a tendency to stop the preceding vowels.

Although, as has been already mentioned (pp. 58—60), many persons consider that *no* vowel is heard in the last syllable of *table*, yet no one seems to deny the existence of a vowel in the final syllables of *taper* or *sabre*. And yet the vowel in these two cases is identically the same (though of course differently modified by r from what it is by l), and arises from the same cause, viz. the inability to pronounce tē*pr* or sē*bɹ* (using the notation already proposed for distinguishing final from initial consonants), without interposing the natural vowel between the p or b and r. But as we find tāblə in French, so also do we find sābrə.(13) One reason why the vowel has been recognised before the r, and not before the l, appears to be founded on the greater imperfection of the r contact; and another that the final r is itself vocalized and made=ə in England, so that the ə and r reinforce one another and produce the effect ɐ̱. Again, the present orthography generally inserts the vowel before r, (although in a few words, as *sabre*, *maugre*, &c., the French collocation of the letters is still preserved); and hence the eye is accustomed to see a vowel before r and not before l. It is *extremely* difficult to untrammel the mind which has been so many years bound down by the vices of miscalled orthography.

L, l.

In uttering r the tip of the tongue is vibrated; to pronounce l the tip is fixed, as for d, and the *sides* only are vibrated: hence l only differs from d in this vibration, and consequently a confusion between d and l may be anticipated and is well known to exist. In the ordinary English l the tip is placed in precisely the same spot as for d, but for the Polish l (ʟ) the tip is advanced and approaches the teeth. The tip may be placed further back, but in that case the tongue assumes the position required for y, and the result is best represented by the two letters ly, although it may perhaps be considered as a simple sound (see sect. 5). Here, however, we shall only consider two l's, one in advance of r and one behind r, so that

(13.) So pronounced in poetry; in speaking, the r and l are either dropped or converted into rh and lh: thus, tāblh or tāb; sābrh or sāb. See the next section under rh and lh.

we shall have three palatal trills, in the order L r l, the two extremes formed by the sides of the tongue and the middle one by the tip, corresponding exactly to the three palatal sibilants dh, z, zh, and forming the 𝔅 class of trills.

The consonant L is very difficult for an Englishman to pronounce, but is very easy for Polish organs, being about the most common letter in that language. To utter it distinctly the tip of the tongue must be pressed firmly against the back of the teeth, but not be pointed upwards as for dh; on the contrary the tongue should press as directly as possible against the teeth. Having arranged the tongue in this manner, endeavour to articulate the common l, and the result will be very nearly accurate. This L occasions a thickening of the subsequent vowel, so that Lī is an impossible combination; we must either say Lî or lī.

The common English l is formed by placing the tip of the tongue against the centre of the palate, making the tongue convex on its upper part. By this arrangement the sides of the tongue are left free to vibrate, while the breath is forced past them. This consonant is the most imperfect of all in which there is a decided contact (in r the contact is undecided), and its modifying effect upon the vowel is consequently very marked, as may be perceived in the following examples:

lea, *lay*, *la!* *law*, *lo!* *loo*; *eel*, *ale*, *all*, *hole*, *pool*,
=lī, lē, lā, lō, lo̱, lū; īl, ēl, ōl, h-o̱l, p-ūl;

and *lily*, *valley*, *holly*, *pulley*; *solace*, *soulless*,
lĭl*i*, văl*i*, hŏl*i*, pŭl*i*; so̱lĕs, so̱llĕs.

When l follows the short vowel ə, the sound heard is almost entirely due to the modifying power of l, and this may be one reason why many persons ignore the vowel altogether, and consider the whole effect in the last syllable of *table* to be due to the l alone. We have endeavoured to combat this opinion (p. 59), and shall recur to the general theory of such combinations hereafter; but it may be remarked in passing, that the pronunciation of the French word *table* cannot be *completed* without removing the tongue *from* the palate, while the English word *table* is completed by bringing the tongue *to* the palate, and that consequently the final syllable in the two cases are essentially different, and it would be false to represent them both by bl.

It will be found upon observation that there is a great tendency to pronounce the words *eel*, *ale*, *all*, *hole*, &c., where the l follows a long vowel, as if they were written īəl, ēəl, ōəl, ho̱əl, &c. This is owing to the extreme imperfection of the contact for the formation of the consonant l.

Such a pronunciation is, however, esteemed erroneous, and is avoided by all careful speakers.

R and l are both trills, though performed with different parts of the tongue; but if when we are pronouncing r the tip of the tongue be too much elevated it will strike the roof of the mouth and become fixed, while the tongue being still in a state of tremor will most probably continue to vibrate, which it can only do by permitting the sides to trill, as for the letter l. This seems to be the rationale of the confusion so often observable between l and r. In some languages these letters are regularly interchanged, producing to the eye a remarkable change in the form of a word, as may be seen in the following examples. From *γλυϰορίζα (sweet root)*, a name which was probably pronounced by its inventors glĭkorīz*a*, the English have very naturally formed *licorice* = lĭkərĭs or lĭk*o*rĭs, while the Italians have *regolizia* = rēgolĭts*ia*, and the French *réglisse* = rĕglīs.

'G, ɢ.

The guttural trill is exceedingly difficult of execution; it is like a very soft gargling sound in the throat. This gentle pronunciation is peculiar to the modern Greek *γ*, and to the French *r grasseyé* or *r provençal* when following another consonant as in *frère;* in other cases the French *r grasseyé* receives a much harsher sound, described in sect. 4, under qh. It is quite impossible to convey an adequate idea of this sound by any description; oral instruction and long practise are the only means of acquiring it correctly. Dr. Rapp (vol. i., p. 60) considers that it must bear the same relation to g as v does to b,(14) and goes on to say: "I think that I can pronounce it in the word *aga* (*αγα*), and there are languages, as the Danish, which assert that they pronounce *g* between two vowels (as *sige*, say) with a softened sound of this description, but only as an auxiliary sound; in the old German languages, however, nothing certain of this kind occurs, because gh, which is allowedly frequent, belongs to another class. In order to fix this sound, you fall into the following expedients: 1), the g is made mute; as is usual in the Danish case just cited; 2), a soft *aspirate* gh or kh is substituted; 3), or even the guttural r [rh,

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(14.) This would suppose it, and its whispered form ɢh, to be precisely the same sound as Prof. Latham (*English Language*, p. 106) conceives the two Laplandic consonants to be which he represents by *γ ϰ*. He institutes the following comparisons: "*as* f *is to* p *so is* v *to* b, *so is* th *to* t, *so is* dh *to* d, *so is ϰ to* k, *so is γ to* g, *so is* sh *to* s, *so is* zh *to* z." Expressing this relation by the term *aspiration*, he calls f, v, th, dh, *ϰ*, *γ*, sh, zh, the *aspirates* of p, b, t, d, k, g, s, z respectively. Our own observations have led us to misdoubt the theory of aspiration. That the two series of letters just cited are *related* is undeniable, that each one of the second series bears to the corresponding one in the first series the same relation in all cases, we believe to be erroneous.

? ꞯʜ] ; 4), or one of two other spirants y or h, which are certainly the best auxiliaries, but y, which the modern Greeks use before e and i [the ɩ class] has this peculiarity, that it cannot be employed in certain positions, as after negative vowels and a [the ɑ and ᴜ classes] ; h, which with a slight aspiration inclines to kh, is certainly nearest the ancient γ; and it is remarkable that in Russian, which has received the Greek Γ into its orthographic system, this letter is made to supply the place of the German h." We express this sound by ɢ. The following are examples:

γάμμα, γνωρίζω, γόνα, γοῦνα, μεγάλην, (Mod. Gr.)
= ɢămm*a*, ɢnōrīzo, ɢŏn*a*, ɢūn*a*, meɢālīn.

II.—NASALS. Continuous.

M m, N n, 'N ɴ.

There are three nasal consonants strictly related to the three explosive oral consonants b d g respectively, from which they only differ in so far that the voice instead of being allowed to escape by the mouth is forced up into the nose, the consequence of which is that when the passage of the nose is obstructed, the attempt to pronounce these letters produces the consonants b d g.(15) We represent these nasals by m n ɴ respectively. The existence of m and n is acknowledged in most languages, and ɴ slips in unrecognized, except in Sanscrit, where it has a peculiar character; in other languages n simply is used, in modern Greek γ, and in English and German ng; it is a natural consonant into which n passes as a matter of course when we attempt to pronounce it before one of the k class of consonants in the same syllable, for which reason ng has most probably been assumed as its proper representative. That ng is an inconvenient symbol will be abundantly evident from the fact that ng sometimes = ɴ, and sometimes ɴg.(16) The initial value of ɴ does not occur in English, although it is said to be found in Chinese and Sanscrit. The following are examples of these sounds:

M, m.

me, may, ma', maw, myrrh, mow, moo; him, am; swimming.
= mī, mē, mā, mó, mĕ̱-r, mō, mū; hĭm, ăm; swĭmĭɴ.

N, n.

knee, nay, gnaw, nurse, no, noon; in, an; finish.
= nī, nē, nō, nĕ̱-rs, no̱, nū-n; ĭn, ăn; fĭnĭsh.

(15.) For a ludicrous example see Mr. Dickens's *Oliver Twist*, where one of the characters (Barney), from a perpetual cold in his head, invariably substitutes d for n, and says "do̱, dŏt dau," for "no̱, nŏt nau" *(no, not now)*, &c.

(16.) We have represented it by the small capital ɴ; but ng might be used, provided we agree that it should *always* = ɴ, and ɴ only; using n·g for n followed by g, and ngg for ɴg: thus, ĭngglĭsh, sĭngər, fĭnggər, ĕn·grāftĕd, which we should in the text represent by ĭɴglĭsh, sĭɴər, fĭɴgər, ĕngrāftĕd.

’N, ɴ.

sing, sang, sung; hängen (ger); *gesungen* (ger); *finger, singer.*
=sĭɴ, săɴ, sə̭ɴ; hĕɴən; gəsŭɴən; fĭɴgər, sĭɴər.

In all the cases which have been noticed in this section the consonants have been mere modifications of the voice, and therefore perfectly incapable of affecting the ear except in connection with the voice itself. But voice is not the only sound which can be emitted from the mouth, as the mere act of breathing or blowing will also produce a perceptible sound. If then we place the parts of the mouth in the same positions respectively as for producing the modifications of the voice already noticed, and instead of producing voice merely *whisper*, we shall produce a series of sounds not strictly vocal, because not accompanied by the voice, but bearing a close relation to the modified sounds of the voice just explained. This set of sounds is the subject of discussion in the next section.

Section 2.—*On the Whispered Consonants.*

The connection between whispered and spoken consonants (suprà p. 21) is best shewn in a continuous case. Let the reader say vā, and observe the position of the lips and teeth at the commencement of this sound; let him retain the parts of the mouth in this position and force the breath, unaccompanied by the voice, through the small aperture left between the teeth and the lips. A peculiar *hiss* will be the result, perfectly distinct from any modification of vocal sound, but quite clear and articulate. How shall we represent this sound? In page 40, note 2, it has been shewn that the most philosophical method would be to annex some diacritical sign, as ‘, to the spoken consonant, thus v‘; but for practical purposes it was more convenient to abbreviate v‘ into a single character, as f. This character f, then, does not simply represent a consonant, but the breath as modified by this consonant; v represents simply a modification of the voice and is unpronounceable, or rather inconceivable, when separated from the voice; f represents a sound which may be uttered at any time. It was for this reason, no doubt, that this and the other continuous consonants received the name of *semivocals*. Some of them were also termed *aspirates*, which term, if it had only been applied to whispered consonants might have been esteemed correct, because they are *aspirated*, or breathed, in the same way as the vowels are breathed or whispered when preceded by h, which letter is also called the aspirate. The breathing, however, in the case of the consonants is quite different from that in the case of the vowels, and the term *aspirate* was continued for spoken consonants, as v, dh, gh (see suprà under these letters), for which it was highly improper. There are consonants in Sanscrit which are accurately aspirated like the vowels, and it is therefore better, perhaps, to keep the term aspirates for these consonants only.

Having thus obtained a clear idea of what a whispered consonant is, namely, the breath modified in the same manner as the voice would be modified by the corresponding spoken consonant, we may proceed to examine the whole list of whispered consonants in the same order as we previously considered the spoken ones. And first we may remark, as a singular fact, that there are whole nations to whom the spoken consonants, which would seem the most natural, are entirely unknown, and who only possess the whispered consonants; such are the inhabitant of the Eastern Archipelago, China, &c.

I.—ORALS. 1.—Explosives.

P, p; T, t; K, k.

In pronouncing bā, the vowel was uttered simultaneously with the act of relieving the lips from contact, or rather *before* they were quite released. If we separate them before the vowel is uttered, allowing the breath to be condensed during a very brief space of time, the sound pā is heard. There is a similar distinction between āb and āp; in the former, the effect of the voice remains throughout the consonant, and we may feel a slight tremor of the lips while it is being produced; in the latter, the vowel, properly so called, entirely ceases before the contact is completed.

In precisely the same manner we may derive tā from dā, and āt from ād; and again, kā from gā, and āk from āg. The characters p, t, k, here employed to represent the whispered consonants p, t, k, are almost invariably so used in English orthography.

The distinction between the whispered and spoken sounds is, as we have said, not by any means so sharply marked in the explosive as in the continuous consonants; and it is consequently easier to confuse the two kinds of explosives. The continuance of the voice for a very small fraction of a second longer than requisite, will necessarily convert the whispered into a spoken explosive consonant, and conversely. We thus find whole nations unable to discriminate the two cases; the Germans are a remarkable instance in point, especially the inhabitants of Saxony. It is very common to hear p and b used indifferently by a speaker utterly unable to distinguish one from the other.(1) But it is perhaps more com-

(1.) Thus we know a case where a vain attempt was made to discover whether a gentleman's name was Blo̱r or Plo̱r, as the informant sometimes said one and some-mon to hear p and b pronounced in such a manner, that even to our English ears, accustomed to an accurate distinction between them, the sounds appear nearly identical. The very short space of time (a small fraction of a second) during which the breath acts, in order to distinguish p, t, k from b, d, g respectively, sufficiently accounts for this singular phenomenon.

Rapp, who commits the error (as it seems to us) of considering that whispered and spoken consonants only differ in the greater or less degree of energy with which they are uttered, believes that the three original explosive consonants were of the ambiguous nature just described. represents them by the three Greek characters, π, τ, κ, and terms them indifferent. "The Greeks," says he (*Ph. d. Sp.*, vol. 1, p. 57), "certainly the modern, and, as may be almost demonstrated, the ancient also, uttered these sounds in their pure original state of indifference with regard to energy, or in plainer language, the later idioms, and Latin among the first, and perhaps even certain Greek dialects effected a certain duplicity in this vocal theory, by drawing a distinction between the utterance of a sound with a greater or less degree of energy, and thus in Latin they distinguish p and b, t and d, k and g." He even considers this separation to have been an "unimportant subtlety (*Spitzfindigkeit*)," and says that it is "not a development, but a mechanical splitting of the indifferences," continuing to apply the terms "hard and soft" (*hart und weich*) by which, the Saxon, who hears no difference, distinguishes them when occurring in the alphabet, thus, ā, vhaikhĕs πē, tsē, vhaikhĕs τē, ē, ĕf . . . , o̱, hārtĕs πē, . . ĕs, hārtĕs τē &c. The consequent errors in speaking and writing are both numerous and ludicrous. It may be correct that π, τ, κ, were first uttered without any certainty regarding the separation into whispered and spoken, but the distinction is real and essential to languages as at present constituted; we have, therefore, based our classification upon it, and shall take no further account of the "indifferent π, τ, κ."

It should be remarked that foreigners frequently give a more thickened pronunciation to t and d than is usual in English; this is produced by making the contact nearer to the teeth than is customary with us; but there is no need to have a separate character to denote this, as it is rather a peculiarity than a variety of pronunciation. The following are examples in which the consonants just mentioned occur:

P, p. *peep, pipe, Beppo* (it), *pippin,*=pīp, paip, Bĕppo, pĭpĭn;
T, t. *teat, tit, sitter, concetto* (it)=tīt, tĭt, sĭtər, kŏntshètto;
K, k. *cake, kick, back, backer, Bacco* (it)=kēk, kĭk, băk, băkər, Bàkko.

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times the other. "Oh, Blo̱r?" "Yes, Plo̱r; I told you Blo̱r, Plo̱r, Plo̱r, Blo̱r, you hear."

I.—ORALS. 2.—CONTINUOUS. 1′—*Sibilants.*

Wh, wh.

Of the existence of this consonant mention is made in chap. 6, p. 80. If the reader has rightly seized the idea of a whispered consonant as distinct from a spoken one, he will find no difficulty in pronouncing the whispered wh, having only to place his lips in the position for w, and blow, previously to uttering the vowel. The effect produced will certainly be the same as if he endeavoured to pronounce hw; but it is theoretically more correct to consider wh as a separate consonant.

Fh, fh.

This is the whispered consonant corresponding to vh. There is no difficulty whatever about it, as it is clearly the common whistle, without the musical tone. This will show the reader how he must place his lips for vh, the German w. The following quotation (furnished by Mr. Thornton) seems to imply the existence of this letter in some American languages; it is taken from DUPONCEAU *(Mém. sur le systéme gram. des langues de l'Amér. du Nord* p. 104*)*; "The consonant *ou* of the *Lénâpés* [lĕnâpē] as in our word *oui* [meaning wī, and not ui; the consonant is therefore our w] but followed immediately by another consonant, and pronounced without intermediate rest, which has caused it to be called *ou* or *w whistled* [? wh], because it is really necessary to whistle in order to utter it. The *Iroquois* languages have no *f*; the *Algonquins* neither *f* nor *v*. Both of these are very rare in American languages; the *v* is hardly ever found. In the *Ottomis* (Mexico), *f* is a pure labial, the teeth taking no part in it. This may be called a *blowing* or *blown f* (f *soufflé* [fh]). The Spanish grammarians call it *(improperly)* a double consonant, and write it *ph*. It was, perhaps, the φ of ancient Greece, or π aspirated."

F, f.

The whispered consonant corresponding to V, v, already described at the beginning of this section. "There is no trace of *f* in the language of the *Gipsies*."(2) "No *f* in Sanscrit, Pali, Bengali, Estonian, Phenician, and Tibet alphabets, nor in the Georgian, Lesghi, and some other Caucasian languages, and, doubtless, in a great many others. F and v appear to us very natural, easy, and as it were, necessary sounds. So do our two th's [th and dh] and our sh, which, however, far from being general, are wanting in many languages; the former especially."(3)

(2.) POTT (Dr. A. F.), *Die Zigeuner in Europa und Asien* (=dī tsigōinər ĭn ōirọpa ŭnd ăzyən, the Gipsies in Europe and Asia), Part 1. Halle, 1844.

(3.) Private letter from Mr. Thornton, to whom we are also indebted for the quotation from Dr. Pott.

Th, th.

The whispered dh, very frequent in our language, but rare in other European tongues. It is an Anglo-Saxon letter as well as dh, but it is remarkable that in many instances, as *thou*, *the*, *that*, *this*, &c.,=dhau, dhī, dhăt, dhĭs, dh replaces the Saxon th, these words having been *thú*, *the*, *thæt*, *this*,=thū, thē, thăt [?], thĭs. The Spanish z in all cases, and c before e and i,=th. Rapp, however, makes th differ from this z, which he says is simply a lisped s,(4) but we are unable to detect any difference. The th is best described to a foreigner as a "lisped s."

S, s.

The common sibilant; the whispered consonant corresponding to z. Rapp considers that the ancient (and modern) Greek σ represents an "indifferent" consonant, which lies between s and sh."(5) "In order," says he, "to consider the entire development of the S class, we must seek for an example beyond our own family of languages. The Polish has rendered this service to theory. The pure soft s [z] is in this language represented by z, and the pure hard [s] by s. In the next stage the sound intermediate to s and sch [z and sh], (to produce which, the upper surface of the tongue close to the tip, and not the tip itself, must be advanced against the teeth), is denoted by an acute accent over the consonant, the soft by z′, the hard by s′ [z', s',—see infrà, sec. 5]; finally in the third stage, where the tongue is broadened and seems to try and fill the whole palate, and to strengthen the hiss by the oval opening of the lips,—in this stage the soft sound, or the French ge [zh] is symbolized by a z with a cedilla or a point over it, and the hard sound [sh], which in our languages is expressed at one time by *ch*, at another by *sh*, or *sc*, or *sk*, or *sj*, or *s* simply, is in Polish denoted by sz. The Portuguese is the only language which has a simple character *x* appropriated to this sound." If this "indifferent s," be really what we denote by s', in sec. 5, it is, to our ears, rather a *compound* than an "undeveloped" consonant.

Sh, sh.

The whispered consonant corresponding to zh, is frequent in English and German, but never occurs in Dutch, Anglo-Saxon, or Latin; and a comparison of English words with these, shows that sh has been "evolved" from the combinations sky, sy, ky, ty. In some cases we have retained the spelling, as *special*=spĕshəl, *notion* first=nǫsyən, then=nǫshən, &c. But the spelling is changed in *sheep*=shīp, Anglo-Saxon *sceaf*=skyà̆f, [according to Rask.]

(4.) "Wir sagen, sie stoszen mit der Zunge an."—*Ph. d. Sp.*, vol. 1, p. 67.

(5.) *Ph. d. Spr.*, vol. 1, p. 68.

Yh, yh.

The whispered form of the coalescent y, (see chap. 6, p. 77), We shall have to consider its occurrence at length in sec. 5, to which the reader is referred.

Ch, ch.

The whispered guttural sibilant, corresponding to jh. It is very frequent in the common pronunciation of German, as it is the sound assumed by kh, when preceded by a vowel of the í class; as *ich*=ĭch; *pech*=pĕch. It only occurs initial in the termination *chen*, as *mädchen*=mēdchĕn. As the Germans have a difficulty in distinguishing the whispered from the spoken consonants,(6) it is not surprising that they often confuse ch with jh; hence, *einig* is often pronounced ainĭch, instead of ainĭjh; and ch is often written for g in such words, even by Germans of tolerable education.

Kh, kh.

This is the stronger sound, corresponding to the spoken gh. In German it only occurs final and medial, as in *ach*, *doch*, *sache*,=ākh, dŏkh, zàkhə; but in Modern Greek and Russian, it is often initial. It is frequent in Arabic, and it is observable that the modern pronunciation of Hebrew confuses H with this consonant, so that the Jews say No̱ăkh for No̱āH, yĭtskhàq or yĭtskhàk for yĭçHàq.(7) It is in the same manner, as it appears to us, that the Modern Spanish j is said to=kh, instead of H. The introduction of this consonant into a language derived from the Latin, seems to be due to the influence of the Arabic language as spoken by the Moors in Spain, and was probably the Oriental H, but may, in some cases, have been derived from kh. To our ears the Spanish j rather resembles H than kh, so that *Quijote*=K*i*Ho̱te; *Mejico*=MēH*i*ko; *Tejas*=TēHàs.(8) The well known softening of the Spanish j into h in pronunciation, seems to indicate that H is the proper hard sound.(9)

2′.—*Trills.*

’Bh, Bh.

This corresponds to B. Its proper sound is produced by trilling the lips only, and emitting unvocalized breath. See sec. 1, under ’B, B.

(6.) "An educated organ *(gebildetes organ)* is necessary for accurately distinguishing the hard [whispered] explosive consonants from the soft [spoken] ones."—Rapp, *Ph. d. Spr.*, vol. 1, p. 63.

(7.) The meaning of the symbols ç, q, is explained in Sect. 4.

(8.) In the old orthography, current in English works, and embalmed in English mispronunciation, these names are written *Quixote*, *Mexico*, *Texas*, and delight in the English caricatures Kwĭksẹt, Mĕks*i*ko, Tĕksẹs.

(9.) Rapp, however, inclines to the generally received opinion, *Ph. d. Spr.*, vol. 3 pp. 83—85.

'Lh, ʟh.

This whispered ʟ does not occur in any language, to our knowledge.

Rh, rh.

The whispered form of r is really a difficult sound; nor is the proper mode of pronouncing it very evident. It is said to occur in Chinese, although many philologists deny that the letter r occurs at all in that language. Thus Adelung states(10) that its place is supplied by l, in Chinese. This letter is, however, perfectly conceivable, and clearly wanted to complete the series. The French sometimes pronounce r in a manner which should seem identical with this letter. In the termination *re*, as *ordre*, *offre*, *maigre*, the *r* being pronounced with its initial value, and having (in ordinary conversation) no vowel after it, can only be pronounced with a breath, and, hence, must necessarily be rh, and these words *should*, perhaps, be written ôrdrh, ŏfrh, mêgrh.(11) If so, the breath is very slight, and almost evanescent. This is a subject for future consideration. Rh is said to occur in Welsh.

Lh, lh.

If even the English reader has well seized the idea of a whispered consonant, he will have no difficulty in framing the whispered consonant corresponding to l; he has only to place the tongue in the position proper for l, and let the breath pass before any vowel is uttered. This sound, which we symbolize by lh, is the Welsh ll, as in *Llangollen*=Lhàngolhən, On account of the position of the tongue, the breath escapes plentifully on each side of it, in accordance with the humourous instruction which is sometimes given for the pronunciation of the Welsh ll, "double up the tongue, and send one l out of each corner of the mouth." By many persons (judging from their pronunciation), this lh is supposed to be a compound sound equivalent to thl, to which it certainly approximates, but from which it must be carefully distinguished. Bp. Wilkins (*Real Character*, p. 382,) considers it as a whispered l, and says "it is almost proper to the Welsh, and is scarce used by others."

In the same manner as rh was, in the description of that letter, supposed to occur in French, lh may, we think, be found there, in the terminations *ble*, *ple*, &c., as *able*, *temple*,=āblh, tan̲plh. The breath is here, however, very gently ejected, and scarcely audible, being only just enough

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(10.) *Mithridates*, vol. 1, p. 41. See *Phonotypic Journal*, vol. 3, p. 7.

(11.) "The French, in common with other languages, erroneously assuming r and l to be consonants (orals), not vowels (pulmōnals), endeavour so to pronounce them as to preclude the vowel or pulmōnal sound, which, being impossible, they only become *Halital* (or sural), instead of *vocal* (or sonal). This sound is also indicated by the P *(rho)*, and ('), *spiritus asper;* thus 'P, expressed in Latin thus, Rh."—Henslowe, *The Phonarthron*, pp. 18—19.

to make the letter appreciated. Some speakers, neglecting to add the breath, lose the letter entirely, and say, ā̄b, tan̲p. This is a French defect.

'Gh, gh.

The whispered consonant corresponding to ɢ, is yet more difficult to conceive than rh; we can furnish no instruction for pronouncing beyond what is contained in the fundamental idea of whispered consonants.

II.—NASALS. Continuous.

Mh, mh; Nh, nh; 'Nh, ɴh.

The whispered m n ɴ are recognized in the Welsh language, although many Welshmen are unable to appreciate them. We shall represent them by mh, nh, ɴh respectively.(12) We think that the existence of mh may be distinctly traced in French, thus *schisme*, *rhythme*=sīsmh, rītmh, more properly than sīzm, rītm, for the letters s t being whispered, m can only be appreciated by being uttered with a whisper. This is similar to the examples cited for lh and rh. The existence of nh does not appear so clear. But we have been induced by a series of experiments to believe that mh, nh, ɴh, not only occur in our language, but are absolutely recognized in our orthography, under the forms mp, nt, nk, preceding another consonant.

Upon attempting to pronounce the word *exempt*, preserving the full sound of t, it will be found that there is a tendency to utter the consonant p, and that consequently p has crept into the word as usually spelled. The effect of p is, however, rather felt by the speaker than heard by the listener, and to give it full effect an effort is requisite. But in saying *stemmed* there is not the slightest tendency to introduce p or b; the d follows the m smoothly and without difficulty. Whence does this arise? From the fact that t is a whispered consonant and d a spoken one, and that it is always easier to pronounce *two* whispered or two spoken consonants at the end of a word, rather than a spoken followed by a whispered consonant.(13) The effect of p, which, as we have said rather felt than heard after m in the word *exempt*, is entirely due to the whispering of m. The whispered *m* never concludes a word in English, although the spoken *m* frequently does so; but we see a *b* in some cases written after *m*, in order, as it were, to insure that *m* should be spoken and not whispered, thus *lamb*, *lamp:* the b is perfectly inaudible in the first of

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(12.) In p. 42, note 5, they are symbolized by ᴍ, ʌ, ∩, but we consider the present a preferable mode of symbolization, as we find it authorized by Welsh orthography. If, then, our view of the occurrence of mh, nh, ɴh, in English, be correct, the word lărins, in p. 17, note 13, must be altered into lărĭɴhs.

(13.) A final whispered, followed by a spoken consonant (as flĕ*shd*), is an impossible combination.

these words, and can only serve to secure the spoken sound of *m*. The words

lamb, *lamp*, *exempt*, *stamp*, *stamped*, *stemmed;*
will then = lăm, lămp,(14) ĕgzĕmht, stămp, stămht, stĕmd.

In the same way as m, mh, seem to be recognized in our present orthography, the two sounds N, Nh, appear under the mixed forms *ng*, *nk*, with this difference only that *ng* generally represents a simple sound N only, and only unfrequently the two consonants Ng, as in *finger*, *linger;* whereas *nk* generally represents Nk, and but rarely Nh (as in *winked* = wĭNht, compare *wink* = wĭNk; a change similar to that in stămp, stămht). The consonant Nh has a trace of k rather felt than heard; in the same way as a p is felt after m, when mh occurs.

We cannot so positively point to an nh, but it must, of course, bear the same relation to t as m to p and N to k. It generally occurs before s, as in *scents* = sĕnhs rather than sĕnts, as it would be found that a considerable effort would be necessary to give its full effect to t in this word. The difficulty of determining whether *French*, *hinge* = frĕntsh, hĭndzh, or = frĕnsh, hĭnzh, will serve to illustrate this point. Our own opinion is, that the words are pronounced frĕnhsh, hĭnzh respectively, though the general belief is in favour of frĕntsh, hĭndzh.

The symbols whose meaning we have been considering in this and the preceding section, and which may be called *natural consonants*, in contradistinction to those mentioned in the three next sections, may be arranged in a table as follows:

Table of the Natural Consonants.

	EXPLOSIVES.		SIBILANTS.		TRILLS.		NASALS.	
	SPK.	WHP.	SPK.	WHP.	SPK.	WHP.	SPK.	WHP.
LABIALS								
outer	b	p	w	wh	B	Bh	m	mh
middle			vh	fh				
inner			v	f				
PALATALS								
outer			dh	th	L	Lh		
middle	d	t	z	s	r	rh	n	nh
inner			zh	sh	l	lh		
GUTTURALS								
outer			y	yh				
middle			jh	ch				
inner	g	k	gh	kh	G	Gh	N	Nh

(14.) Since m is not necessarily whispered before p, we prefer considering it as spoken.

SECTION 3.—*On the Multiformity of Consonants.*

IN the two preceding sections only such consonants have been mentioned as are recognized, either in their whispered or spoken form, in some European language; but the number of consonants is by no means exhausted by these. There are many which *may* exist in languages of America, Africa, and Asia, of which it is not possible to obtain an exact account. But in a former chapter (p. 83) we intimated that there is another labial ɯ formed from û in the same manner as w is from ū. There may be also another f formed by pressing the *upper* lip against the lower teeth, as suggested by Dr. Chas. Orpen,(15) and a corresponding fh. The d may be very much varied by putting the tip of the tongue in contact with different parts of the palate, and perhaps some sibilants intermediate to the series just given, may be formed. The list of trills is clearly incomplete, for there should be a trill corresponding to each sibilant. We may also imagine a series of *hissed trills*, combining the characteristics of both sibilants and trills; for when s and sh are pronounced the tip of the tongue is at liberty, and if it be made to vibrate, the result will resemble both s or sh and r. Perhaps this combination may be the real sound represented by rz at the beginning of Polish words.

A number of contacts may be executed by striking the roof of the mouth with the under side of the tongue, and pointing the tongue towards the uvula. These are the Sanscrit cerebrals, which, with a few other letters of a similar character, we shall consider in the next section under the name of *strengthened* consonants. Again, while the tongue is in the position for some other consonant, as d or l, the back part of the tongue may be moved upwards into the position for forming y. This case will be considered in the 5th section under the name of *weakened* consonants.

In all these cases the effect is supposed to be produced upon an expiration, but they may be also produced upon the inspired breath. The consonant, however, remains the same: it will be only necessary to have a character to indicate inspiration, for which 8 (an inverted 8) may be used, to form 8l, 8r, 8f, 8fh, 8ʙ, 8ɴ; 8l being the sound made to encouraging horses; 8r that in swallowing or rather sucking in a liquid, as tea from a saucer, soup from a spoon; 8f, a noise made to babies; 8fh, a whistle during inspiration; 8ʙ another noise made to babies; and 8ɴ being the snore!

In short it would appear that the number of consonants is nearly infinite; but in this work we shall content ourselves with those usually acknowledged to exist is different languages, as in the two preceding and succeeding sections.

(15.) "I do not know that it exists in any language; but it is, I believe, occa-

SECTION 4.—*On the Strengthened Consonants.*

THE great distinction between these consonants, and those considered in the first and second sections, is, that they are pronounced with a retracted and sometimes inverted tongue; that is, with the under part of the tongue turned upwards, the tip being pointed towards the uvula. The only such letters which occur are the strengthened forms of d, t, k, z, s, G, n, and these (with one exception, qh) are only found in Asiatic languages.

'D, D.

The strengthened d is supposed to be peculiar to the Arabic language; but it appears to us that the Sanscrit cerebral d must be the same letter under a different name. The tongue is inverted and the under part pressed against the palate. The effect is that of a *thickened* d, and the following vowel is necessarily broadened. This letter is difficult even to Orientals: the Persians corrupt it into z; the Arabic name is Dâd.

'T, T.

The strengthened t is merely the whispered sound of the preceding letter. This is the Arabic Tâ.

Q, q.

To produce the strengthened k the tongue is merely retracted, so that the anterior half of the upper part of the tongue comes in contact with the uvula. This is the Arabic qâf. Sir G. Wilkinson *(Modern Egyptians)* says that it is frequently pronounced like g, and in the neighbourhood of Aleppo and Damascus it becomes 0 (see p. 93).

'Z, z.

The strengthened z (z) only differs from z in the force with which the voice is projected through the narrow opening left by the tongue, which is somewhat more retracted than for z.

'S, ç.

The whispered consonant corresponding to z.

Qh, qh.

The strengthened G, which we represent by this symbol, is a harsher sound than G, and produced with a more retracted tongue. The chief distinction between qh and gh is, that qh requires the throat to be *wet* (in order to produce the trill) and gh *dry* (for the sibilant). It is common to confuse them, and this letter qh is almost invariably transcribed into gh, as *Ghuznee*=qhṷznī; sometimes into g simply, as *Bagdad*=

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sionally pronounced by people who are, what is called, underhung, that is, whose lower jaw projects beyond the upper, like a *bull-dog's.* If a bull-dog spoke f, he would use the upper lip and lower teeth."—*Private Letter from Dr. Chas. Orpen.*

bâqhdād. The Arabs appear to consider it as a variation of ɔ (see p. 93), and it has somewhat of the same guttural effect. This disagreeable letter is at present very common in French, being known as the *Provençal* r. In England it is called the *Newcastle burr*. It is singular that some of the Newcastle people themselves pronounce a pure g instead of this letter, probably from inability to pronounce the more difficult sound, thus hăgyət for hăqhyət, meaning hăryət *(Harriet)*.

ŋ̬.

The last of the strengthened consonants is ŋ̬, which in Sanscrit, the only language where it occurs, is termed *cerebral*, a term also applied in that language to D and T. It should be observed that the Hindoos, who have adopted the Arabic alphabet, employ different signs for D, T, and the Sanscrit cerebral *d*, *t*, a distinction apparently due to etymological views only. We believe that ŋ̬ is formed from D in the same way as n from d, and this may be the best clue perhaps to its pronunciation.

SECTION 5.—*On the Weakened Consonants.*

It will be observed that in the pronunciation of many people the effects of *k* and *g* in the words *kind*, *guide*, are somewhat different from the values of *c* and *g* in the words *conned*, *goad*. As the other consonants are precisely the same in these two cases, it would appear that these differences depended upon the vowel, if we did not find the same initial effects as in *kind*, *guide*, in *card*, *garden*, as pronounced by many persons, especially *actors*, who are supposed to aim at the most correct pronunciation. Mr. Smart, who does not admit this sound in the instance *kind*, says that we hear "a slight semi-consonant [?] sound between ī and y," after k and g, in these cases, and he indicates its presence by writing *gu'ide*, *c'ard*. Mr. Knowles inserts the ī at full. The French term these consonants *liquid (mouillé)*, and call the unmodified consonant *hard (dur)*. Volney *(L' Alfabet Européen*, p. 91) says, "for the liquid g, gē, gī, the tongue is advanced in a square form and comes in contact with the anterior and middle portion of the palate, lying flat against it. On the contrary for the hard g, gā, go̱, gū, it retires in a square form, and being raised near the root comes in contact with the bottom of the *velum pendulum*" (suprà, p. 18, note 40).

The true explanation of the phenomenon, which does not affect g and k only, appears to be, that when the consonant is of such a nature that the anterior part of the tongue only is called in requisition, the posterior portion may be at the same time elevated into the position which it would assume for y. As the tongue in pronouncing k and g is nearly in this position already, there is a natural tendency to bring it fully up into the proper form before lowering it as for the pronunciation of ā, so that these sounds of k and g occur most frequently before the vowels of the a class, as ɐ̭ k'ɐ̭ntr*i*, ai k'aind, ā g'ārd.

The question of symbolization which arises is not very easy to settle, and it has been differently answered in many languages. In French, an i precedes an l or ll; in Italian, g precedes and i follows the liquid l; in Spanish, ll only is used; in Portuguese, lh; the liquid n is in French and Italian gn, in Spanish ñ, in Portuguese nh. In Polish, an accute accent is used over c (=ts), n, s, z; in Russian a particular alphabetical character follows; but in these two languages if a vowel follow the liquid n the mark of liquidity is transferred from the letter to the vowel, i being inserted in Polish, and a peculiar character employed for the vowel in Russian. The g and i have here similar meanings, both referring to the introduction of y; for the h it is difficult to account, except that the liquid l and n are necessarily sibilant. It appears to us that the proper mode to pursue would be to insert y between the liquidized consonant and the vowel, and to subjoin yh to the consonant when no vowel follows; but as yh is not usually recognized, we shall content ourselves with an apostrophe in this case, indicating an omission; thus, *kind, guide, card, garden,* = kyaind, gyaid, kyārd, gyārdən, in the pronunciation alluded to; and (it.) *figlio, intaglio, soglio;* (sp.) *llamar, Habaña;* (fr.) *règne, montagne;* (it.) *regno, sogno;* (eng.) *bullion, bunion, ronion;* = fīly*o*, ĭntāly*o*, sôly*o*; lyāmār, āvāny*a*; rên', mon̠tān'; rēny*o*, sôny*o*; bŭlyən, bɐ̭nyən, rɐ̭nyən, respectively. It is observable that the French theoretical ly, l' become in practise y, yh only, as *fille, ail, billard, œillard,* = fīl', āil', bīlyār, ɐ̦ilyār, *theoretically,* and = fīyh, āiyh, bīyār, ɐ̦iyār, *practically.* In English, ly, ny, are common enough, but are rarely preceded by long vowels; *genius* = dzhīnyɐ̭s is an exception.

This consonantal variety, as it is usually conceived to be, we termed a *weakening*, as the result is *softer* than the unmodified consonants. Such letters are usually considered simple consonants, and as such have been admitted here, but we consider them as true compounds. They stand at any rate midway, and the transition from them to true compound consonants is very direct. But inasmuch as we cannot consider the nature of compound consonants without discussing syllables, we shall here terminate our "Analysis of Spoken Sounds," and proceed to the second part of our subject which treats of their *composition*, or "synthesis."

THE
ALPHABET OF NATURE.

PART II. SYNTHESIS OF SPOKEN SOUNDS.

CHAPTER 1.—ON THE FORMATION OF SYLLABLES, AND CONSONANTAL SEQUENCES.(a)

NOT to be mistaken when speaking of syllables, it is necessary that we should give our own definition of them, and in the following chapters the word syllable will only be used in the limited signification here assigned to it:—

A VOWEL *or* PROPER DIPHTHONG, *modified or not, initially or finally, by one or more consonants, is termed a* SYLLABLE.

The utterance of the vowel requires the action of the larynx. When the larynx is not used—when the sound produced is that of the breath alone, as in the sounds of f, s, sh, &c., we do not recognise the existence of any syllable, although there is a *sound* of a variable duration. This distinction is by no means arbitrary, but is founded upon the feeling of the listener, which does not accord to such sounds the same dignity, so to speak, as to those which are primarily produced by the vocalized breath.

The vowel is produced during an expiration, and, therefore, we do not account as syllables any of those which require an inspiration to produce them. (See suprà, p. 125.)

We have previously (suprà, p. 75) quoted from Dr. Rapp that a "diphthong must constitute a single syllable." This does not imply that it always forms the *whole* of a syllable, but only that it must not constitute *more* than one syllable. We cannot, however, take this as a characteristic of a diphthong, because we are forced to make use of the idea of a diphthong in order to complete that of a syllable, and we therefore rest our definition of a diphthong upon other points. (Suprà, p. 74.)

To pursue an illustration suggested by Volney,(1) the syllable is a *nut*,

(a.) The references made to this chapter in Part I. belong to Chap. III.

(1.) *L'Alfabet Europćen.* See *Phonotypic Journal*, vol. 3, p. 106.

of which the vowel or diphthong is the (single or double) kernel, and the coats or skin the consonants. The kernel constitutes the essence of the nut, without which it is nothing worth; so the vowel constitutes the essence of the syllable, and (except in the case of the stopped vowel) still forms a syllable, even if all the consonants are taken away.

Each single vocal sound is, therefore, a syllable, and it is, in the greater number of languages, composed of those vowel and consonant elements which we have already investigated; we have, therefore, now only to point out the manner in which this composition takes place. Syllables are, however, themselves, but small portions of spoken language, the compound atoms (to borrow a chemical phrase) from which the whole is composed. From these atoms we first build up words, and then phrases, sentences, speeches. But for the present we shall content ourselves with the isolated syllable. In the first part of this essay we took the compound phenomena of sound, and resolved, or *analysed*, them into their component parts; we have now to take these parts and from them produce new combinations by composition or *synthesis*.(2) But having already bestowed sufficient attention on the composition of vowels into diphthongs (Part I., ch. 6, sec. 1), we have now only to consider the various methods of compounding the consonants, or contacts, already described, into complex combinations.

In this investigation it becomes of great importance to distinguish between the different effects of a consonant consequent upon its preceding or following a vowel, or intervening between two vowels. We shall, therefore, throughout this chapter, adopt the mode of distinction proposed in p. 102, and use the Roman type for the initial value, as b, and the Italic for the final, as *b*; both together for the medial, as *b*b, and the same, separated by an inverted period, for the double as *b*·b. As long as we consider *one* syllable only, we shall have no need of this last symbol, as every word must contain as many syllables as there are vowels and diphthongs, and no more. The combinations which we have to consider in the first place are, therefore, those which occur at the beginning of a syllable, or *initial* combinations, and those which occur at the end of a syllable, or *final* combinations.

I. *Initial Combinations.* Using the term combination in a general sense, we may make it include the case in which there is only *one* consonant preceding a vowel, because this consonant is combined with the following vowel. But as this case presents no difficulty whatever, every consonant (except, perhaps, ɴ, for English organs) admitting of being

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(2.) *Analysis*, from ἀναλύω (anəluo̱, or ànalio̱, in M. G.), *I untie; synthesis*, from συντίθημι (sŭntĭthimai, or sɪntɪ̆th'imi, in M. G.), *I put together*, or *compound*.

pronounced in this position, we will at once pass on to the combinations properly so called.

It will be observed that the table of natural consonants given in p. 124 (to which we shall here confine ourselves) arranges the consonants in order from the outer edges of the lips to the back part of the mouth nearest the throat. Now to produce the effect of a consonant it is necessary to close the mouth; and to utter a sound the mouth must be opened: hence, it is evident that the mouth could be made to pass, in succession, through all the explosives, or through all the sibilants, or through all the trills, or through all the nasals before uttering a vowel. Thus the mouth may pass in succession through all the forms indicated by the letters wvhvdhzzhyjhghē which is, in so far, a pronounceable syllable. But it is a question whether the combined effect upon the vowel is appreciable as such, or whether we should not involuntarily pronounce some other vowel long before we get through the above list of consonants, and thus utter more than one syllable. It will be better, therefore, to limit our first experiments to the combinations of *two* consonants.

Two consonants form a perfect initial combination when, upon the contacts being executed before or during the utterance of a vowel, the result is a modification of the commencement of that vowel, different from what it would be if only one of the consonants were used, and not in any degree attributable to the insertion of some new, perhaps obscure, vowel between the two initial consonants or before the first of them.

Since the effect must extend from the vowel through the second consonant to the first, it is quite clear that the second consonant, being that which immediately precedes the vowel, must not be such as to check the passage of the vowel sound, *that is, it cannot be a whispered explosive consonant.* Hence the combinations pt, pk, tk, are impossible. They may be written, as in the word *ptarmigan*, but they will not be pronounced; thus we *say*, tārmigən. The attempt to pronounce this combination, pt, will result in either pət or əpt, as pətārmigən, or əptārmigən; either of which are very easily pronounced. It is true that the mouth may be put into the position for p and t at the same moment, but after the lips are disengaged for p, no sound can be heard, because t, being a perfect stop, whatever effort we make to utter ā must fail.

The explosive *spoken* consonant is so nearly a stop that we may extend the rule so as to embrace it; the combinations bd, bg, dg, being, also, nearly impossible to execute. They are not quite impossible, and we leave it to the ingenuity of our readers to experiment upon them.

It is very different when the second consonant is clearly continuous. Any inner continuous consonant may follow any outer consonant, continuous or not, with this exception, that if the second consonant is *whispered*, the first cannot be *spoken*, because the vowel cannot pass through the whispered consonant without changing it into a spoken one. The two consonants may be both spoken, or the first may be whispered and the second spoken, or both may be whispered. But the whispered continuous consonant produces such a peculiar effect that it requires a more detailed examination.

The spoken consonant is a mere contact, and necessarily varies the commencement of the following consonant; the whispered continuous consonant is a *sound*, consisting of the breath absolutely or independently modified, preceding a vowel, the commencement of which it can only modify by the effect of that breath. When we say zī, the commencement of the ī is modified, and a closer examination shews us that the sounding of the ī begins before the contact z is unloosened. But in sī the case is quite different. We can go on hissing the s as long as we like before the ī is uttered; thus: s . . . . . ī. The syllable may be thus of indefinite length, but, although composed of two sounds, it is only reckoned as one syllable, because the first sound is not vocal, and, therefore, we are only conscious of one effort of the larynx. When, therefore, a consonant precedes the whispered continuous consonant it is this whispered continuous sound which is affected, and not the following vowel. Such combinations ought, therefore, to be excluded from the definition which we have given of a perfect initial combination, but we shall prefer including them out of deference to common custom and for convenience. When the first letter is an *explosive* whispered consonant, the combined effect is so like that of a single whispered continuous consonant, that we find the principal combinations of this kind have in various alphabetical systems been represented by a single character. Thus ps is *ψ* in Greek, ts is *z* in German, and *c* in Polish, tsh is *c* in Italy, ks is *x* in English, ksh is represented by a single letter in Sanscrit, and even the triple combination shtsh has only a single character in the Russian alphabet. We do not so frequently find the two corresponding spoken consonants thus represented; dzh, denoted by *j* in English and *g* in Italian, is an exception.

Among these combinations we have just cited ks and ksh; these militate against the law that the second contact must be interior to the first. The reason for this, there can be little doubt, is that s and sh are continuous, and, therefore, the preceding k acts upon it as it would on a vowel. Nevertheless, many persons will find it difficult to pronounce ks or ksh *initially*. Hence, in English all Greek words commencing with *ξ*, as *Ξέρξης*, *Ξενόφων*, have been softened in the English pronunciation, and we speak of Ze̱rksīz and Zĕnofən, while the modern Greeks still call the names Ksêrksīs and Ksĕno̱fo̱n.

Another exception to this rule is w, which can be pronounced after any one of the oral letters, though not with the same degree of ease. This we attribute to its vocal origin, and it may be doubted whether in such words as *dwell*, *dwarf*, the true pronunciation be dwĕl, dwōrf, or d*u*ĕl, d*u*ōrf; a species of improper diphthong being formed, without the change of *u* into the coalescent w. Such, we believe, is the opinion of Dr. Charles Orpen.

Next to the sibilants s, sh, the most flexible consonants are l and r, which can be pronounced after any other consonant, although some combinations are rare and others difficult. The facility of shr, as in *shriek*, *shrive*, we attribute to the peculiar circumstance that r is executed with the point of the tongue and sh with the back part and sides, so that both movements can be executed simultaneously,—sh being, moreover, whispered and continuous. Yr, yl, are very difficult combinations, although heard in Prussia, but we doubt whether they are ever pronounced quite pure; the Berlin yrŏshən, for gro̱shən, has a very thick, indistinct sound. As for kl, gl, they are, we think, impossible to pronounce perfectly pure, on account of the stop of the entrance to the throat, so that the vowel necessarily escapes before the l can be brought into play. For this reason tl, dl, are much more common in the mouth of the speaker, especially in England,(3) than kl, gl; although very few will acknowledge that they say so.

Since the continuous hissing consonant has an independent sound of its own, it is evident that any such consonant can be placed before any other. And as no vocal sound will interfere in such cases between these two consonants, the combination may, by a kind of license certainly, be said to be perfect. In this manner we shall find s and sh prefixed to almost every consonant, as *Spain*, *stain*, *skim*, *swift*, *sdrajato* (It.), &c. There seems to be no proper limit to the prefixing of these consonants, and in the Polish and other Sclavonic languages the license is carried quite to excess, the consequence of which is great softness in the sound of the spoken language, (although the many consonants make the written page look bristly and

(3.) *Prof. H. Key*, The Alphabet, &c.; *Webster*, Pronouncing Dictionary.—"GL is dl, as glove is pronounced, by polite people, dlove. CL is tl, as cloe is pronounced, by polite speakers, tlọe."—*Darwin*, Temple of Nature, note XV.—"I know of no instance of *dl*, unless we cite the French *de la*. Children use it instead of *gl*. *Tl* is the favourite combination of the old Mexican language, and has been preserved in numberless names of places. Children pronounce it for *kl*, before they have learned the guttural."—*Rapp*, Phy. d. Spr., 1, 86.—It is not the difficulty of the guttural that makes children prefer tl, dl, to kl, gl, for infants of a few months old utter guttural sounds with ease; the difficulty arises from l being exterior to k and g. *Ugly* is easy, *glee* very difficult to a child.

rough) so that in the mouths of females it becomes almost too gentle.(4) Skshńě̆tsk*i*,(5) is an example of an abundance of initial sibilants.

From the double combinations, the first letter of which is continuous, a triple combination can be formed by any letter which will form an initial combination with this first letter; and a triple combination can be formed in all cases by the superaddition of a continuous sibilant, as s or sh, as *stream*, *spray*, &c. The first kind of triple combinations, in which the second letter is continuous, are rather rare, but in German we meet with *pflaum*, *pfründer*=pflaum, pfründər, but the difficulty of pronouncing pf is by many Germans found to be so great that they either drop the p or the f, and say flaum (in Hamburg), or plaum (in the Palatinate), whence English *plum*.

Some of these initial combinations are more or less difficult to different nations. Thus sth, easy to a Greek, as in σθένος, and not very difficult to an Englishman, is to a German so insurmountable,(6) that Rapp(7) seems to doubt whether it be possible. The Semitic nations, on the other hand,

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(4.) *Kohl's* Austria.

(5.) In Polish letters, *Skrzynecki*, the name of the celebrated general. The following phrase is celebrated among Poles for the difficulty of its combinations of sibilants: *brzmi chrza'szcz w trzcinie* (literally, buzz cockchafers in bullrushes), which is pronounced, as nearly as we can recall, after a lapse of a year since we heard it, bərzhmī khərzhǫŋshtsh əftshtsīny*e*, although the introduction of the auxiliary ə is not acknowledged by the Poles themselves. Even *with* its assistance, we doubt not that our readers will find the words sufficiently difficult. The three idols of a Russian are, tshĭn, tshā̆i, and shtshī *(rank, tea, and cabbage-soup)*, in the last of which we have the not unfrequent Sclavonic combination, shtsh, used initially.

(6.) We well recollect the futile attempts of a German lady to say *Southampton*. Her word was either sauzàmtən, or thauthàmtən; but we heard an English stage-coachman cry, "Sthamtən, sər," with no apparent difficulty. It would be, perhaps, wrong to call any *possible* consonant, or combination of consonants, *essentially* difficult, as we continually find combinations which appear perfectly impossible to ourselves, exceedingly easy to others. Thus, Englishmen find it difficult to utter ɴ before a vowel, as ɴā̆, but this is a common word in New Zealand; a native of which country, finding it impossible to pronounce b, g, v, or s, or two consonants unseparated by a vowel, or any consonant when only preceded and not succeeded by a vowel, transforms Governor Hobson (the first English Governor of his country) into Kā̆wan*a* Hǫp*i*hǫn*a*! (See the Treaty of Waitangi, which, probably, = Wait*a*ɴ*i*, and not Waită̆ɴ-g*i*, as we should most naturally pronounce it.)

(7.) Phys. d. Spr., vol. 1, p. 91. "Greek σθ (that is, σth, [see suprà, p. 120,]) σθενος. An extraordinarily difficult combination for us [Germans]. In English, Greek words of this kind commencing with sth, are pronounced with st as in German, e. g., *sthenography;* while in *sixth*, the s remains mute, and they say sikth." Here are two errors: the word is *stenography*, from Greek στενος, and not σθενος, no English word commencing with sth; and in *sixth* the s is *never* omitted, although some speakers corrupt th into t, and say sikst, instead of siksth.

have great difficulty with all compound consonants, and we therefore find the Hebrews always inserting their shəvā, our ə, as bərēshīth, for brēshith, while the Arabs prefer prefixing the same sound as əfrăɴk*u*, our *Frank*.

II. *Final Combinations*. In examining these we are met with a difficulty upon the very threshold, for if we pronounce a vowel with an explosive consonant after it, as ă*t*, we finish with a contact; thus in the example cited, the tongue remains against the palate, and in disengaging the tongue it is very difficult not to produce some sound; this sound will not indeed be syllabic, provided the consonant be whispered, as in the instance given, but if the consonant be spoken as in ă*d*, there is a great chance of the voice being continued, and another syllable formed. In fact many persons *do* pronounce an additional syllable in such cases, and say ă*d*də, instead of ă*d*. The majority of speakers will perhaps say ă*d*t, a combination preserved in the German word *stadt*. If, however, another consonant immediately follows, there is no such difficulty, as ă*t*-mo̱st, ă*d*-mair, which are of very easy pronunciation. The reason of these phenomena we believe to be that the whole effect of a consonant is felt to be compounded of its final and initial effect, and the omission of one of them, is accounted a defective utterance. It may be from having observed this effect that the German and old English orthographers terminate many words with double letters, as *pack*=pă*k*k. It is remarkable, however, that in modern English orthography this reduplication is not found when the word terminates with any explosive consonant except k and g (as s*ack*, *egg*, the c before k being equivalent to a k), but that it is the rule with the continuous consonants *f*, *s*, *z*, *l*(8) as *staff*, *hiss*, *whizz*, *well*, while in point of fact the reduplication of utterance only occurs with an explosive consonant, as in the continuous consonants the loosening of the contact merely puts an end to the hiss. Hence it is easy to say hĭ*s*...., hwĭ*z*...., and continue the sound for any length of time.

For the final combination of more than one consonant we have, therefore, as a first requisite, that the consonant next following the vowel should be continuous, or, if explosive, at least spoken, the explosive spoken consonant being *partially* continuous. If this first be spoken, the second may be so also, as the voice may be kept on; but if the first consonant is whispered, the second *must* be whispered, as the voice cannot be set on again without generating a fresh syllable.

The explosive whispered consonant, wherever it occurs, precludes the possibility of continuing the combination further; but as the continuous consonants have sounds of themselves, which do not form syllables, we

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(8.) The only exceptions being *of*, *if*, *as*, *is*, *has*, *was*, *yes*, *his*, *this*, *us*, *thus*.—Savage, *Dictionary of Printing*.

may add another continuous whispered consonant without increasing the number of syllables. Such cases are frequent enough, thus, ĭ*t*s, hŏ*p*s, să*k*s, prī*st*s, &c. When a great number of such hissing consonants concur, the effect is unpleasant, and it is very difficult to preserve the monosyllabic effect, as in twĕ*lfths*, in which all the final consonants are continuous. The explosive *spoken* consonant, as we have said, does not absolutely cut off the voice, and therefore it may have a consonant after it. Hence tē*bl* is pronounceable, while ă*tm* is not. But it would be very difficult to pronounce tē*bl*, and consequently the English and Germans insert a vowel before *l*, as tē*b*bəl, tā*ff*əl*;* while the French whisper the *l* as tāblh, or entirely omit it as tāb, or add a vowel after it as tāblə.

When an explosive consonant occurs between a vowel and a hissing consonant, it acts nearly in the same way as when it occurs between two vowels; namely it becomes *medial*, its final effect acting upon the preceding vowel, and its initial effect upon the succeeding continuous consonant. In English the most remarkable instances of this medial power are furnished by the combinations tsh, dzh. We have seen that at the beginning of a word tsh combines very closely, in so far that many persons consider the combination to be, in fact, a single simple effort; but this effect does not occur when the combination is medial or final. We consequently much more generally find the t written in such cases, thus *etch* is clearly equivalent to ĕ*t*tsh, so that if we choose to separate the two values of t we may produce the double consonant, thus: ĕ*t*·tsh, the latter part tsh being exactly identical with tsh at the beginning of a word. The combination tsh therefore produces really, and not apparently only, a different effect at the end from what it does at the beginning of a word, for at the beginning of a word it is only the initial values of the t and sh which are heard, whereas at the end we have the *final* value of t *in addition*. If we make the combination medial as in the word *etching*, this effect becomes only more prominent, and the result is clearly = ĕ*t*tshĭɴ. It is somewhat different with dzh on account of d being an explosive *spoken* consonant. At the commencement of a word dzh can be very easily pronounced, although it is wanting in many languages,(9) but at the end of a word *two* cases are

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(9.) Neither French nor German possesses the combinations tsh, dzh. In French, *ch*=sh, and *j*=zh; hence the combinations *tch*, *dj*, are used for these sounds. This has had a great influence on our Arabian names of places, which we have principally derived through the French, and we consequently meet with Djebel, Djourni, &c., meaning jēbĕl, jūrn*i*. The Germans use *sch* for *sh*, but have no recognized method of writing zh, although many grammarians use *sh*, *s* being in German=z, and z=ts. To express tsh and dzh, when they occur in names (the former is rather common, on account of the neighbourhood of Bohemia and other countries, in which Sclavonic languages, and, therefore, tsh's abound) and foreign words, they use the awkward possible; either that the voice should be stopped completely by d, when the result would be *d*sh, (not *d*zh, because the voice could not be superadded without producing a new syllable) or *d*tsh; or the voice may be continued through the d, and the result may be *d*dzh, which it will be if a vowel follows. Thus, the word *judge* may = dzhɐ̭*d*sh, dzhɐ̭*d*tsh, or dzhɐ̭*d*dzh; while *judging* = dzhɐ̭*d*dzhiɴ. To pronounce dzhɐ̭*d*dzh distinctly when no vowel follows, requires considerable effort; dzhɐ̭*d*sh is the easiest of these combinations, when no vowel follows, and as far as our observations go, the most frequently employed; dzhɐ̭*d*tsh would only be used by an energetic speaker.

As affects the sequence of spoken and whispered consonants in final and initial combinations, the following rule is without exception:

"*No Whispered Consonant can be interposed between a Spoken Consonant and a Vowel.*"

Hence if we use *sp.* for a spoken, and *wh.* for a whispered consonant generally, and *vow.* for any vowel, we find by this rule that the combinations

sp. wh. vow.; vow. wh. sp.; are impossible;

the *vow.* being followed or not, in the first case, by any final combination and preceded or not, in the second, by any initial combination.

Under the restrictions already pointed out, however, the following combinations are possible:

Initial, *sp. sp. vow; wh. wh. vow.; wh. sp. vow.*
Final, *vow. sp. sp.; vow. wh. wh.; vow. sp. wh.*

In the first set, the vowel may or may not be followed, and in the second preceded by other consonants. These six combinations are illustrated in the following words:

blow, *pfau* (G), *quell* (G);(10) *alb*, *waft*, *width*
= *bl*o̱, *pf*au, *kvh*ĕl; a*lb*, wa*ft*, wĭ*dth*

As a general rule it is easiest to join two letters of the same kind, and thus we can *generally* determine from one consonant to what class its fellow must belong. For example, we may be almost sure that the plural of stăg will be stăg*z*, for although stăg*s* is quite pronounceable, yet if we strove to pronounce s distinctly we should most likely change the g into k, and say stăks.(11)

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combinations zsch (as Zschokke=tshŏkə, the novelist) or tsch, and dsch; thus, in Adelung's *Mithridates*, vol. 1, p. 288, the Persian word, junā̆nchih=dzh*u*nāntsh*i*, (in like manner as), is symbolized by *dschinantschi*. In p. 287, the same word is written *dschinanki*, and in p. 289, by *tschü̆nontschi*.

(10.) The antiquated oath, "'sdeath"=sdĕth, is an English instance, and, perhaps, a better one.

(11.) See the remarks on mh, nh, ɴh, suprà, p. 123.

III. *Medial Combinations.* These are such combinations as occur between two vowels. When a single consonant occurs in this position it has usually both a final and initial effect in continuous succession; sometimes, however, the continuity is broken, and then the consonant becomes double, as in the English words *soulless, unknown* = so̱*l*les, ụ*n*·no̱n. In syllabizing, it is usual to perform this separation *when the preceding vowel is stopped*, thus *pen-ny* = pĕ*n*·ni; whereas in pronouncing the word itself no such separation is made, and the speaker says pĕ*n*n*i* naturally and clearly. This seems to be the origin of those frequent reduplications in English when a vowel is stopped, until the reduplication of the following consonant has come to be considered the mark of a stopped vowel in the Germanic tongues. In English, however, we have a number of words of Latin origin, and as in Latin this mode of distinguishing between a full and a stopped vowel does not appear to have been adopted, we have many words in which it is not used; thus *family* = fă*m*mil*i*. This word should be syllabized fă*m*-m*i*-li for the same reason as *penny* was divided pĕ*n*-n*i*; but it *is* syllabized fă*m*-*i*-li, and this is the best practical manner of dividing the syllables where the consonant is not doubled in the usual pronunciation of the word, for it must never be forgotten that when we syllabise we pronounce *un*naturally, so that neither fă*m*-*i*-li nor fă*m*-m*i*-l*i* would sound amiss, but to say fă*m*·mil*i* in common conversation would produce a very unpleasant effect.

One syllable may terminate with any final combination, and the next begin with any initial one. It is clear then that cases may arise in which the last consonant of the first combination may produce its final effect in this combination, and at the same time exert its initial effect on the subsequent consonant thus forming an initial combination with it. Thus if stsh occur between two vowels, the result will most probably be *st*tsh, and not *st*sh simply. On account of the vicinity of the contacts sh and y, ty is often pronounced in such a manner as to be indistinguishable from tsh, which is a more familiar sound in our mouths. From these two causes we find such words as *question*, *bastion*, which we must suppose to have been originally pronounced kwĕ*st*yən, bă*st*yən, transformed through kwĕ*st*tyən, bă*st*tyən into kwĕ*st*tshən, ba*st*tshən, the former invariably(12) and the latter very frequently.

On the other hand there is no occasion in reality to pass on from the

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(12.) We have heard it called kwĕ*sh*shən, evidently designedly, because *tion* should be "properly" pronounced shən, and, therefore, ques-tion should be kwĕ*s*-shən, but the *s* fell naturally into *sh*. This we conceive to be erroneous; in question, quæstio, there is an original elision of t, quæst-tio being the true Latin word; hence, question=questtion, and this might change into kwĕ*st*tyən, and so into kwĕ*st*tshən.

final to the initial effect of the consonant, although it may be in particular cases somewhat difficult to avoid doing so, as when a word ending with an explosive whispered consonant concludes a sentence. When, however, the consonant is followed by another with which it does not, or does not easily or usually, form an initial combination, no more than the final value of the consonant is heard, as *Ætna, Patmos, napkin,* &c. = ĕ*t*nə, pă*t*mŏs, nă*p*kin.

We may now see the reason for the notation proposed in p. 103. When a consonant precedes a vowel it must have its initial value; when it follows it must have its final value, but *may* be followed by its initial value, that is, it may be medial. When a consonant can be medial it generally is so, as between two vowels, between a vowel and a sibilant, &c. The position alone is, therefore, in the generality of cases, sufficient to mark whether the initial, final, or medial value of the consonant be intended. The *double* consonant may always be denoted by doubling the character. Whenever a consonant has *not* its final or medial value when it follows a vowel or continuous consonant, or has not its initial value when preceding a vowel or continuous consonant, it must be separated by hyphens as ro̱b-rūm, meaning rō*b*rūm, as rōbrūm would be naturally pronounced ro̱*b*brūm. Thus we shall write fămi*li*, so̱llĕs, ə̢nno̱n, dzhə̭dzh (or dzə̭dsh), tə̭tsh, &c.

CHAPTER 2.—ON EMPHASIS, ACCENT, AND QUANTITY.

HAVING combined our elementary sounds into syllables, and syllables into words by the addition of other syllables when necessary, we may proceed to join words into sentences. As soon as we begin, however, to connect two syllables together, we perceive that there is something which gives more prominence to one than to another. We do not pronounce each one of a collection of syllables which have collectively one single meaning, with precisely the same force or intensity. We may observe a similar effect in music; certain notes in a musical passage will be distinguished from the rest by having a stress laid upon them, without undergoing any alteration in their pitch or time of duration. This stress we agree with Dr. Rapp in considering as merely a greater degree of loudness.

A single syllable or a collection of syllables will constitute a word when they are spoken in invariable connection, and in such connection represent one or more ideas which are as invariably connected in the mind of the speaker; provided that, if the collection consist of more than one syllable, there be always some syllable which is distinguished from the rest by a stress laid upon it, or the loudness with which it is spoken. That is, every word must have an *accent* upon one of its syllables. To this it may be objected that there are a number of words, such as *in*, *as*, *of*, *to*, &c., which are never accented. These are not, properly speaking, *words*, because they do not represent ideas, but *only the relations of ideas;* according to the accurate distinction of Prof. Bekker they are *relational* and not *notional* syllables.(1) If we extend the definition of words to take in these cases also, we shall certainly have words altogether unaccented. There are, however, many languages in which more or less of these relational syllables form parts of notional words; thus, what we express in English by *the father of the man*, would be in Latin *hominis pater*. Might we not just as well suppose *of-the-man* to be one word, and term it the *genitive definite* of the word *man*, as to suppose it to consist of three words? It is, however, customary to consider *of-the-man* as three distinct words in English, and the tendency of the foregoing remarks is merely to show that such a separation of words is perfectly *artificial*. We shall find in speaking that these relational syllables are in fact treated as parts of the notional words to which they belong, and we pronounce dhəfa´dhər ədhəman´ (or nearly so, for different persons differ very much in the manner in which they pronounce these relational syllables), and thus produce as much two words as in Latin *hominis pater*. Such words are the natural words of speech, and it is to these natural words that the rule of having one accent refers.(2)

Although the loudness with which one syllable is spoken must always predominate in a collection of syllables constituting a word, yet the remaining syllables may be pronounced with very different degrees of loudness. A certain degree is necessary in order that any sound should exist. If we call the loudest syllable the *accented* syllable, then the next in loudness is said to have a secondary accent, the next a tertiary, and so on; but that pronounced with the least degree of loudness in each word is generally said to be unaccented, a term which must be understood relatively and not absolutely. Very few words, and those only very long ones, have more than two accents. In order to express the arrangement

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(1.) We do not intend to say that these words were not *originally notional*, inasmuch as the relation of two words is necessarily a *notion;* but they have been subsequently degraded until it becomes exceedingly difficult to discover what the original notion was. The investigation of these original notions supplies the subject-matter for much of the acute reasonings in Tooke's "*Diversions of Purley.*"

(2.) Our own language is very sparing in attached relational syllables, or altered terminations (inflexions), used to express the *relations* of the original words. Other languages are full of them, and we are sometimes struck by the apparent brevity of these languages. Thus, the well-known exclamation, "*lama sabachthani,*" is transof accents in a word, the method employed by Dr. Rapp is very convenient; it consists in using the numbers 1, 2, 3, for the primary, secondary, tertiary, accent, and 0 for the absence of accent, so that the numbers 1, 2, 3, &c., are nearly in the inverse proportion of the loudness with which a syllable is uttered.

Thus the words	are accented
Of man's first disobedience, and the fruit	0 1 1 2012 0 0 1
Of that forbidden tree, whose mortal taste	0 2 010 1 2 10 1
Brought death into the world and all our woe,	1 1 20 0 1 0 1 2 1
Sing, heavenly Muse;	1 100 1

In marking these words some monosyllables have had a secondary and others no accent at all given them; this is because such words must be considered as natural parts of others preceding or following them. It is, however, sometimes difficult to decide whether the accent is really primary or secondary in such cases.

We can now understand the difference between Emphasis and Accent. As a primarily accented syllable predominates over all the others in the same word, so an emphatic word predominates over all the others in the same clause; and as there may be words with a primary, secondary, tertiary, &c., accent, so there may be clauses with a primary, secondary, tertiary, &c., emphasis. Each collection of words terminated by a slight pause, has, however, one word which is more emphatic than all the rest,

lated "why hast thou forsaken me;" but if we analyse the phrase, we shall not find a great advantage on the Semitic side. *Lama* is *for what,* two words in one, which we contract into *why,* and often separate into *what for. Sabachthani* consists of three parts: *sabach,* forsook, or has forsaken, because we discriminate what, in the original, is confused; *tha,* thou; *ni,* me; although these words are only so used when affixed to others. Hence, translated word for word, and syllable for syllable, we have "*forwhatforsookthoume,*" which is of precisely the same length. We will give another example:—The Arabic word, *bikurūnihim,* was cited by our master as one word expressing what required many words in English. On analyzing, we find, *bi,* with; *korūni,* horns; *him,* their;—with their horns, three syllables, instead of five; and it is only a peculiarity in our mode of writing, that we prefer writing them disjoined, and not connected, thus, *withtheirhorns',* as we pronounce them. Since writing the above note, we have an opportunity of seeing these ideas well carried out in Dr. Brown's Pasaglott System of Teaching Languages. Languages, in which the relational parts form separate words, he terms *analytic,* and the other *synthetic.* Thus, he dissects the Latin word, *amavissemus,* into *am,* love; *a,* act; *v,* have-d (preterit); *isse,* might, could, would, should, or ought; *m,* I; *u,* euphonic epenthesis; *s,* thou; so that *amavissemus* is the synthetic "*loveacthavedmightiandthou,*" &c.; while "the English idiom requires the translation to begin with grammatical characteristics, and to proceed from the right almost directly to the left; as, 'Thou and I (that is, we) might, ought, could, would, or should have acted, or made love, or have loved,'" p. 2.

and this may be considered the natural clause, in the same way as a similar test determined the natural word. A sentence is composed of one or more clauses, and each sentence will have its predominant clause. Each sentence must, however, contain a proposition, or something asserted concerning something else. We are not going to enter upon the logical construction of sentences, as it would lead us too far away from our present subject. It is for the same reason that we shall not enter upon the slight modifications which some of our assertions respecting emphatic words in every clause, &c., must necessarily undergo in particular circumstances. It is sufficient, in this place, to point out the general theory, which the reader will readily apply, and adapt to particular cases.

This loudness, or accent, is, theoretically, entirely independent of the duration of the syllable which is thus more loudly spoken; and, in instrumental music, the very shortest tone can be produced with any degree of loudness. As a general rule, however, it will be found that it is almost impossible to pronounce any syllable with a great degree of loudness without making such a muscular effort that the muscles refuse to relax with the same rapidity as when the sound is slight. Hence the tone of such syllables necessarily lasts somewhat longer, and it may be a question whether any true short vowel can ever receive the accent. At any rate, it is clear that this is not the case in English, and, probably, in any modern European language. In the ancient languages, however, we meet with a theory of duration totally independent of accent, on which it is necessary to make a few remarks.

The absolute duration of the sound of a syllable is called its *quantity*. In order to compare the quantity of any syllable with that of another, it is convenient to refer both to some standard. This standard is called the short syllable, and is presumed to be the shortest sound which a man can utter distinctly. It is, however, evident, from this subjective definition, that a "short syllable" must have very different meanings according as it is used by different persons. The theory goes on to say that the syllable of twice the length of the short syllable is *long;* and, in as much as a vowel can of itself constitute a syllable, it follows that the long vowel is exactly twice the length of a short one. Ths short syllable is supposed to consist of the short vowel, preceded by as many consonants as we please, and followed by not more than one; for if a short vowel is followed by more than one, whether in the same or a following syllable, the syllable containing it becomes long. There are certain cases in which this last rule does not apparently hold good, as when a vowel is succeeded by a mute (p, b, t, d, k, g, f, v, s, z, &c.), followed by a liquid (l, r, m, n.) Thus, in Latin, the word *nigro* has the *i* naturally short, and the first syllable may, therefore, be either long or short. The reason of this we suppose to be, that as *gr* is an initial combination, the syllables might be divided *ni-gro,* in which case, the *i,* not being followed by any consonant, would be short; or *nig-ro,* when the first syllable would end with a consonant, and the next syllable beginning with one, it would be *long by position,* as it is termed.

This theory, which seems in the highest degree artificial, is nevertheless so grounded in nature, that the whole of the ancient Latin and Greek versification is founded upon it. How these nations managed to keep up in each word the duration of each syllable distinct from its accent, without speaking in a regular musical singsong, we are not prepared to say. The fact of the versification being founded upon the duration of the syllables, and not upon their accents (except, perhaps, some of the older Latin poems), while all modern verse (French excepted(3)) depends entirely upon the succession of the accents to give it rhythm, would seem to show that, as at present, the accent is the predominating feature of a word, so in the flourishing times of the Greeks and Romans, it was the succession of quantities which produced the chief effect on the ear. There are, however, some considerations upon the nature of sounds, which seem to show that the distinction of duration is not founded in the nature of syllables, and they will, perhaps, tend to account for the present total disuse of that species of rhythm which is based upon it.

(3.) There it no recognized accent in the French language. There *is,* however, a spoken one, which is very carefully investigated by Rapp. This modern accent is generally on the first syllable, but the rhyme of the older poetry presupposes an accent on the *last* syllable of the line. The whole of French versification is highly artificial. The heroic verse consists of two lines of twelve syllables, followed by two of thirteen syllables (the thirteenth being an *e muet,* or so pronounced), and these followed by two of twelve syllables, and so on. The rhymes which do not terminate with e muet are called masculine, those which do, feminine; this has nothing to do with the genders of the words themselves. No word beginning with a vowel is allowed to follow one ending with a vowel. But for this purpose the final nasal vowel is not counted such; and the final vowel *may* be an *e muet,* which is then elided. In other cases (except in the third person plural imperfect, as *aimaient*) the e muet is reckoned as a syllable, and, when the words are sung, always pronounced; but its general omission in reading poetry, by destroying the regularity in the number of syllables, destroys, at the same time, the little remnant of rhythm that the lines possessed. There must always be a pause at the end of the sixth syllable. The rhyme being thus the chief mark of the termination of the verse, blank verse is, of course, unknown; it would be absolutely indistinguishable from prose. The rhyme is frequently allowed to consist of two *identical* syllables. We have purposely omitted to consider the principles of rhyme and versification in this little work, as they require a more extended notice than we were able to bestow upon them; but the structure of French verse is so peculiar and so little known out of France, that we thought a short notice of it would prove interesting.

A long vowel may be prolonged to any length, and consequently cannot be presumed to be precisely double the length of any given measure (see suprà, pp. 56, 57). Again, the stopped vowel, (which cannot be heard except in conjunction with a consonant) is merely rudimentary and is always shorter than the unstopped short vowel however short that may be. This theory also assumes that the preceding consonant can add nothing to the length of the vowel, which is true enough, but, if it is continuous, it may add considerably to the length of the syllable. No one, for example, will pretend that he can pronounce strĕɴgth in the same space of time as eɴth; or, to take a still more striking example, skshńĕtski in the same time as ḿĕtski. The theory then commits the mistake of considering vowels independently of the syllables of which they form part. As regards the following consonant, the theory will only allow a syllable to be long when the short vowel is followed by at least *two* consonants, and yet if a vowel be followed by only one, but that a continuous consonant, the duration of the syllable may be prolonged indefinitely, as hĭs . . . . ., but the vowel itself remains the same length however few or many consonants may follow it. True in Italian (and perhaps therefore in Latin) when a *double* consonant follows any vowel, both are pronounced, that is, there is a slight pause between the final value of one consonant and the initial value of the next, and consequently the time of pronouncing the first syllable may be considered as lengthened by the intermediate pause.

In *singing* words, again, we find that the most stubborn syllables may, by practised organs, be pronounced in the shortest times, and apparently the shortest syllables lengthened by a little contrivance, so that we are more than ever perplexed in our search after the feeling of the different duration of syllables. Mr. Mitford (in his *Harmony of Language)* endeavours to prove the existence of quantity even in the English language, but we feel quite unable to appreciate his examples. Whatever the feeling of long and short syllables was, it may be safely declared to be lost at the present day, except in one single instance, namely that of the long and short vowel, and in this instance the short vowel is always unaccented, although we have long vowels which are perhaps unaccented, or at any rate have only a secondary accent (suprà p. 56). The effort necessary to produce a greater degree of loudness, as before remarked, occasioning the speaker to dwell longer upon these accented sounds. Thus although accent is in itself perfectly distinct from quantity, yet the presence of accent occasions (in modern languages, at any rate) an increase in the length of the syllable.

We mention what is called "foreign accent" here, although not exactly referring to the other matters in this chapter, because we do not consider it deserving of a separate section. The "tone," as it is better called, to distinguish it from the accent which we have just been considering, is properly, the *quality* of speech. It is that which distinguishes the pronunciation of one person from that of another, independently of the real difference in the sounds they utter; in the same way that the note played by a bassoon differs from that played by a violin (suprà, p. 29). It is the same with the pronunciation of different nations. A Frenchman will utter ā differently from an Englishman, and this difference must be ascribed to the foreign tone only. We have no means of marking the existence of this tone but by prefixing to any sentence the words "French tone," "German tone," &c., as may be required. What these tones are, can only be learned by much practise and observation in the countries themselves where these tones prevail.

CHAPTER 3.—THE TRANSITION ALPHABET.

In the preceding pages we have given an analysis of our own sensations as far as they relate to spoken sound, and we have employed certain characters which recall those sensations to us. If any one else attaches certain sensations to those characters they will in like manner serve to recall them to him. Whether the set of sensations which they recall in others will be precisely the same as those which they renew in us, it is impossible to say, but the probability is that they will be neither exactly the same nor very dissimilar. We have attempted to go beyond the mere analysis and to point out certain land-marks which should guide others in their endeavours to obtain the same set of sonorous sensations. It is only when those land-marks have been firmly established by frequent experiment, and have been generally recognized, that we can hope to succeed in the formation of a natural alphabet.

The term "Alphabet of Nature," we should apply to *a series of symbols representing certain Mechanical Conditions requisite for the production of the sensations termed spoken sounds*, so that those conditions being fulfilled, the same set of sensations in the same order may be produced in any individual. The sensations will, indeed, differ in different individuals, but it is absolutely necessary to the idea of perfection in an alphabet that the sensations should be precisely similar every time that they are experienced by the *same* individual.

Such an alphabet it is at present impossible to construct. But an approximation may be made to it. Prof. Willis's experiments allow us to attach definite ideas to certain symbols. Thus o̱ represents the sound heard when a pipe is vocalized and extended to $4\frac{1}{10}$ inches (supra p. 35). This symbol is then one which may be said to belong to the Alphabet of Nature: it represents certain mechanical conditions which may be produced at any time, and which will be followed by certain sensations in different individuals, *each sensation being symbolized by* o̲, *because, although, probably, different in each individual, it is the invariable sequence of the same conditions in each.* This one instance may suffice to give a clear idea of what a real Alphabet of Nature would be for the vowels, and to shew how desirable it would be, if attainable. As regards the consonants we are fortunately able to approach more nearly to the required degree of perfection. We believe that the consonant scheme we have proposed is, as far as it extends, nearly perfect. This arises from the fact that the consonants or closings of the apertures of the mouth produce more marked modifications of the voice than the mere contracting of those apertures, whereby the vowels are distinguished. Hence we find in etymology that it is the consonants to which the original signification of words seems to cling.

By these observations we would be far from implying that our own consonant scheme contains *all* the consonants which exist, or that those which we have selected are arranged absolutely in the best order. Our doubts principally affect the gutturals, or throat consonants, and the nasals, as we believe that it is the near approach of those consonants to the vowel modifications which occasions the difficulty concerning them. Thus Prof. Latham (*English Language*, p. 106) mentions two Lapland sounds which he symbolizes by χ γ and would place where we have inserted kh gh, considering kh gh as mere varieties of k and g. There would also appear to be varieties of the nasal consonants or vowels in the Chinese language; but of these we are unable to speak.

We wish not to be misunderstood in the title we have chosen for this work, "The Alphabet of Nature." We have already explained what we mean by this term, and have expressly said that we do not consider knowledge in a sufficiently advanced state at present for the formation of such an alphabet. The series of symbols which we have proposed in the preceding pages do *not* then constitute an Alphabet of Nature, they are only offered as *approximations* to such an alphabet; an approximation, not to the *forms* which it would be best to assign to the characters in such an alphabet, but to the analysis on which it should be constructed. The forms have been selected upon quite a different principle, namely, a desire to approximate in the greatest possible degree to the forms in common use, so that the words written in accordance with our alphabet may be printed by common printers with an ordinary fount of types. We have also endeavoured to render the printing *easy*, by a contrivance, which we shall explain presently, for diminishing the number of diacritical marks employed for shewing the difference between full and stopped vowels, so that we may offer our alphabet as the most complete yet constructed and the most convenient for general typographical purposes.(1)

In the former chapters(2) we gave the several tables from which a complete alphabet may be formed, and we shall now collect these into one complete table, in which each sign will be placed in what we consider its proper position, together with some word in which the sound represented by this sign actually occurs. This, it will be observed, is only a subjective standard, and we regret that we have none better to offer. The mode of using the one we furnish is as follows. Let the reader pronounce the exemplificative word carefully until he is quite certain of the sensation which he receives in uttering it, and is able to discriminate this sensation from all others and to reproduce it as often as he pleases. This is a difficult task, but it is absolutely necessary for the perfect comprehension and use of the alphabet we furnish. Having obtained this sensation and having the idea of it clear in his mind, he is able to compare it with the sensations which he experiences when other persons speak, and is able to say with certainty what sonorous sensations are excited in him when they utter certain words, and therefore to know whether they are among those sensations which he experiences in repeating the key words in our table. If they *are*, he is immediately able to spell that word, *for himself*, in such a manner as perfectly to recall the pronunciation of the individual whom he heard speak. But it may be asked ? will the same characters recall to another person, who uses the same alphabet, and who has acquired the knowledge of its use, in the manner already indicated? Of this we can be by no means sure, *because we are ignorant of this person's constitution and therefore cannot possibly state whether the same external causes will produce the same effect upon him as upon the first person.* But as the general sensations produced in different individuals by the same external causes, do not appear, in ordinary cases, to differ very much, (indeed, were we to find that they did so differ we should conclude that one or more of them were very peculiarly constituted,) we may assume that in

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(1.) We do not even except Mr. Pitman's Phonotypic Alphabet, because of the new types which that requires, and because, although temporarily extended, it is really limited to the English language. When the phonotypes come into general use, as it is to be hoped they will, and the alphabet is properly extended, it will, of course, be far more convenient than *any* other hitherto proposed. This Alphabet is explained in Part III., infrà.

(2.) Suprà, pp. 51, 54, 64, 73, 78, 79, 80, 83, 85, 86, 88, 89, 90, 95, 124, 126, 128.

this case also the difference of sensation will not be very material; if it were, there would be no possibility of constructing an alphabet at all; nay, language itself would be impossible. We believe that the sensations of sound in different persons bear a very much greater resemblance than the ideas excited by words having an abstract signification. For example, we think that the sensations of sound excited in any number of persons who have studied our alphabet, by the characters rait, rŏɴ, trūth, dzhɐ̭stis, whĭg, tōr*i*, tshɐ̠rtsh, &c., would be of a much more uniform kind than the ideas excited in the same people by the corresponding words, *right*, *wrong*, *truth*, *justice*, *whig*, *tory*, *church*. More than this it is of course impossible to accomplish.

These remarks will serve likewise to shew the impossibility of there being any standard for pronunciation. Even with the help of the speaking machine, when properly constructed, it would be impossible to make the whole world pronounce alike. The different constitutions of our nervous systems (of the brain in especial) forbids it. The causes being different in each individual the effects are necessarily dissimilar. It is the same with painting. We have only to regard the pictures of the different masters with a tolerable degree of attention to become aware that each paints in a certain *style* both of form and colouring, and this style can only be attributed to the constitutional differences of the painters themselves, and consequently of the sensations which they derive from viewing the same natural object. We have been induced to dwell on this point because it is one but too often neglected by those who judge of the utility or inutility of such undertakings as the present, and of the correctness of the results obtained. It must be borne in mind that there are as many different vowel systems as there are speaking individuals in existence;(3)

(3.) "Facts daily presented to our observation, afford equally simple reasons for almost infinite diversification of language. It is invariably found that wherever society is at once dense and refined, language tends to be uniform throughout the whole population, and to undergo few changes in the course of time. Wherever, on the contrary, we have a scanty and barbarous people, we have great diversities and comparatively rapid alterations of language. In so much, that while English, French, and German are each spoken, with little variation, by many millions, there are islands in the Indian Archipelago, probably not inhabited by one million, but in which there are hundreds of languages, as diverse as are English, French, and German. It is easy to see how this should be. There are peculiarities in the vocal organization of every person tending to produce peculiarities of pronunciation; for example, it has been stated that each child, in a family of six, gave the monosyllable, fly, in a different manner (eye, fy, ly, &c.,) until, when the organs were more advanced, correct example induced the proper pronunciation of these and similar words. Such departures from orthoepy are only to be checked by the power of such example; but this is a power not always present, or not always of sufficient strength. The able and that out of this infinite diversity only few can be selected, and that those few must be characteristic vowels, which will excite *nearly* the same sensations in all individuals; identity of sensation being of impossible attainment. It will consequently happen occasionally that sensations will be experienced for which no symbol has been proposed; this is inevitable. In such cases it will be necessary either to invent *new* symbols, with small chance of their being understood, or to use a symbol which recalls a sensation very closely approximating to the correct one.

With these preliminary observations we present to our readers the alphabet which we have composed in accordance with the analysis explained in the preceding pages. We shall term it "THE TRANSITION ALPHABET," as we presume to consider it as a stepping stone from what is notoriously bad, to a just, philosophical, and *natural* analysis and arrangement of spoken sounds.

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self-devoted Robert Moffat, in his work on South Africa, says, without the least regard to hypothesis, that, amongst the people of the towns of that great region, 'the purity and harmony of language is kept up by their pitchos, or public meetings—by their festivals and ceremonies, as well as by their songs and their constant intercourse. With the isolated villages of the desert, it is far otherwise. They have no such meetings; they are compelled to traverse the wilds often to a great distance from their native village. On such occasions, fathers and mothers, and all who can bear a burden, often set out for weeks at a time, and leave their children to the care of two or three infirm people. The infant progeny, (some of whom are beginning to lisp, while others can just master a whole sentence, and those still farther advanced,) romping and playing together, the children of nature, through the livelong day, *become habituated to a language of their own* The more voluble condescend to the less precocious, and thus, from this infant Babel, proceeds a dialect joined together without rule, and, *in the course of a generation, the entire character of the language is changed.*' I have been told that in a like manner the children of the Manchester factory workers, left for a great part of the day in large assemblies, under the care of, perhaps, a single elderly person, and spending their time in amusements, are found to make a great deal of new language. I have seen other children, in other circumstances, amuse themselves by concocting and throwing into the family circulation entirely new words; and I believe I am running little risk of contradiction when I say, that there is scarcely a family, even among the middle classes of this country, who have not some peculiarities of pronunciation and syntax, which have originated among themselves; it is hardly possible to say how. All these things being considered, it is easy to understand how mankind have come at length to possess between three and four thousand languages, all different, at least, as much as French, German, and English, though, as has been shown, the traces of a common origin are observable in them all."—*Vestiges of the Natural History of Creation*, 1844, pp. 316-8.

THE TRANSITION ALPHABET.

I. VOWELS.

SYMBOLS. **EXAMPLES.**

Class.	Oral.				Nasal		Oral.			Nasal.	
	Indifferent.	Lg.	Sh.	St.	Fl.	St.	Long.	Short.	Stopped.	Full.	Stopped.
1	i	ī	*i*	ĭ	īn̲	in̲	n*ea*t	sign*i*fy	kn*i*t	*fim* (P)	*fin* (F)
1½	í	î	*í*	ì	—	—	podd*y*mać (Pl)	pomoc*y* (Pl)	towarsz*y*stwo (Pl)	—	—
2	e	ē	*e*	ĕ	—	—	d*a*te	Sund*ay*	debt	—	—
2½	é	ê	*é*	è	—	—	chêne (F)	—	ben (I)	—	—
3	a	ā	*a*	ă	ān̲	an̲	ps*a*lm	mess*a* (I)	S*a*m	v*ãa* (P)	*an* (F)
3½	á	â	*á*	à	—	—	pâte (F)	—	patte (F)	—	—
4	ȯ	ō	*ō*	ŏ	ōn̲	—	c*au*ght	*au*gúst	cot	n*ão* (P)	—
4½	ó	ô	*ó*	ò	—	—	torn*ò* (I)	—	vuol (I)	—	—
5	ɐ	ɐ̱	ə	ɐ̭	—	ɐn̲	c*u*r	knock*er*	c*u*rry	—	*un* (F)
5½	ɐ̗	ɐ̬	*ɐ̗*	ɐ̖	—	—	h*ö*ken (G)	—	b*ö*cke (G)	—	—
6	o	ọ̱	*o*	ọ̮	ọn̲	on̲	bone	limb*o*	bonne (F)	Cam*õe*s (P)	*on* (F)
7	u	ū̄	*u*	ŭ	—	—	f*oo*l	int*o*	f*u*ll	—	—
7½	ú	û	*ú*	ù	—	—	k*ü*hnste (G)	—	k*ü*nste (G)'	—	—

II. PROPER DIPHTHONGS.

SYMBOLS. **EXAMPLES.**

	I Diph.		U Diph.		I Diphthongs.		U Diphthongs.	
	Loose.	Close.	Loose.	Close.	Loose.	Close.	Loose.	Close.
1	—	—	—	iu	—	—	—	bl*ue* (Y)
2	ēi	ei	eu	—	D*ei* (I)	perf*ei*to (P)	*Eu*ropa (I)	—
3	āi	ai	āu	au	*aye*	*eye*	l*au*de (I)	l*ou*d
4	ōi	—	—	—	t*oy*	—	—	—
5	—	ɐi	—	—	br*ui*sen (D)	—	—	—
5½	—	ɐ̗i	—	—	*œil* (F)	—	—	—
6	oi	—	o̱u	—	su*oi* (I)	—	kn*ow* (Y)	—
7	ū̄i	—	—	—	pf*ui* (G)	—	—	—
7½	—	úi	—	—	—	l*ui* (F)	—	—

III. BREATHINGS.

SYMBOLS. **EXAMPLES.**

Soft.	Hard.	Strong.	Hiatus.	Comprsn.	Soft.	Hard.	Strong.	Hiatus.	Comprsn.
ɥ (generally omitted.)	h ('h after consonants.)	ʜ	0	ɔ	▴ee▴	'*he*	casa (Fl)	my▴ouse	▴othman (A)

IV. CONSONANTS.

SYMBOLS.

	Natural.								Strengthened.							
	Explosive.		Sibilant.		Trill.		Nasal.		Explosive.		Sibilant.		Trill.		Nasal.	
	sp.	wh.	sp.	wh.	sp.	wh.	sp.	wh.	sp.	wh	sp.	wh	spoken.	wh	spoken.	wh
LABIALS.																
Outer . .	b	p	w	wh	B	Bh	m	mh	—	—	—	—	—	—	—	—
Middle .	—	—	vh	fh	—	—	—	—	—	—	—	—	—	—	—	—
Inner . .	—	—	v	f	—	—	—	—	—	—	—	—	—	—	—	—
PALATALS.																
Outer . .	—	—	dh	th	L	Lh	—	—	—	—	—	—	—	—	—	—
Middle .	d	t	z	s	r	rh	n	nh	D	T	Z	ç	—	—	—	—
Inner . .	—	—	zh	sh	l	lh	—	—	—	—	—	—	—	—	—	—
GUTTURALS.																
Outer . .	—	—	y	yh	—	—	—	—	—	—	—	—	—	—	—	—
Middle .	—	—	jh	ch	—	—	—	—	—	—	—	—	—	—	—	—
Inner . .	g	k	gh	kh	G	Gh	N	Nh	—	q	—	—	ɋh	—	n̬	—

EXAMPLES.

	Natural.								Strengthened.							
	Explosive.		Sibilant.		Trill.		Nasal.		Explosive.		Sibilant.		Trill.		Nasal.	
	sp.	wh.	sp.	wh.	sp.	wh.	sp.	wh.	sp.	wh	sp.	wh	spoken.	wh	spoken.	wh
LABIALS.																
Outer . .	*babe*	*peep*	*way*	*wh*eel	b*rrr!*	p.110	schis*m*	schisme (F)	—	—	—	—	—	—	—	—
Middle .	—	—	*w*(G)	*wh*ew!	—	—	—	—	—	—	—	—	—	—	—	—
Inner . .	—	—	*valve*	*fife*	—	—	—	—	—	—	—	—	—	—	—	—
PALATALS.																
Outer . .	—	—	*th*y	*th*igh	Ł(Pl)	—	*nun*	nh(W)	—	—	—	—	—	—	—	—
Middle .	*deed*	*teat*	*zeals*	cease	*rare*	fiacre (F)	—	—	D (A)	T (A)	Z (A)	ç (A)	—	—	—	—
Inner . .	—	—	vi*s*ion	vi*c*ious	*loll*	ll (W)	—	—	—	—	—	—	—	—	—	—
GUTTURALS.																
Outer . .	—	—	*yew*	*h*uman	—	—	—	—	—	—	—	—	—	—	—	—
Middle .	—	—	köni*g*(G)	i*ch* (G)	—	—	—	—	—	—	—	—	—	—	—	—
Inner . .	*gog*	*cock*	hoo*g* (D)	hoc*h* (G)	γ M. Gr.	p. 123	han*g*	ngh (W)	—	q (A)	—	—	Newcastle burr	—	Sanscrit cerebral n	—

ABBREVIATIONS IN THESE TABLES.

A.	Arabic.	G.	German.	Pl.	Polish.
D.	Dutch.	I.	Italian.	W.	Welsh
F.	French.	M. Gr.	Modern Greek.	Y.	Yorkshire.
Fl.	Florentine.	P.	Portuguese.		

The only point which will require explanation in this Table,(4) is the use of the indifferent vowel characters which have been introduced for the purpose of saving diacritical signs. For this purpose the indifferent character is made, under certain circumstances, to supply the place of any one of the other three, viz., the long, short, or stopped, which are placed on the same line with it in the table. Hence, the indifferent vowel character will, in an *open accented* syllable, represent a *long vowel*, as bi=bī.

. . . . . . *open* un*accented* . . . . . *short vowel*, as bebi=bēb*i*.

. . . *closed* syllable, accented or not, a *stopped vowel*, as man=măn.

A syllable will, for the purpose of these rules, be considered *closed*, when the vowel it contains is followed by, at least, one consonant at the end of a word, or, at least, two consonants, of which the second is not l or r, in the middle of a word; all other syllables are open. All letters classed as consonants in the table, and no others, are considered to be such.

The use of ı, u, ə, in the formation of proper and quasi diphthongs, has been already adverted to (suprà, p. 81). When the characters express sounds which do not diphthongize with the preceding vowel, they must be marked with a common diæresis; thus, eı̈, aü, iə̤, as eı̈ryəl=aërial.

When the indifferent vowel character does not suffice to represent the proper vowel, the true vowel character must be employed; hence we must write fămili, wēk, wĭked, wīknes, wĕl, for fămi*li*, wēk, wĭkĕd, wīknĕs, wĕl. It will be so frequently necessary to use ə for the short ɐ in English, that we recommend the use of it on all occasions in which the sound it represents occurs; thus, dĭfərənt, rather than dĭfɐrənt, which would, however, represent precisely the same sound.

It will not be necessary to mark the accent on every word. In the majority of languages, it is upon the penultimate, or last syllable but one. In Polish this is a rule almost without exception. The French profess to have no accent, and, therefore, none should be marked on French words (see Part II., chap. 2, note 3). In Hebrew, the accent is generally on the final syllable. In learned Arabic, if a word contains no long vowel, or closed syllable, the accent is on the penultim of dissyllables, and ante-

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(4.) It should be mentioned that we have found it convenient to represent ɐ in writing by a letter somewhat like the Greek ε; to denote single italic letters, by placing a dot beneath them; and single small capitals, by a wavy line, similar to that over the Spanish ñ, and written *over* descending or tail letters, and *under* any other letters. The accents and diacritical marks are written over or under the written letter, in the same way as they appear in the printed text. The printer should always be particularly cautioned about o̱ n̠, that he should not mistake them for the italic *o*, *n*, which should be written *ọ* *ṇ*. The letters

ɐ, ɐ̱, &c., ə, o̱, o̮, &c., n̠, n̬, are only the inversions of
a, ā, &c., e, ō, ŏ, &c., ū, û, respectively.

penultim of polysyllables; otherwise it is on that long vowel or closed syllable nearest the end of the word. In Spanish, the accent is usually on the penultim of words ending in vowels, or the formative s, and last syllable of words ending with consonants; the accent is, otherwise, marked in the usual orthography of Spanish. In Italian, the accent is generally penultimate when the word ends with a vowel, and becomes ultimate when this vowel is elided, as, ĭnvā′n*o*, ĭnvān′; but it is very capricious. In German and Dutch it is on the radical syllable, or syllables, of the word, and is, therefore, immediately discoverable by those who know the language. English, a compound of the Germanic and Roman languages, sometimes follows one rule, and sometimes another; but the feeling of the Englishman leads him to place the accent on the first syllable of dissyllables, and the antepenultim of other polysyllables. In ancient Greek the position of the accent was determined chiefly by the *quantity* of the final syllable; the modern Greeks retain the accent in the same place, but as the feeling of quantity is lost, the accent is necessarily capricious.

From these remarks, it follows that no general rule will apply to *all* languages for the position of the accent; but that if we lay down a few general rules in each language, and only mark the position of the accent when these rules do not apply, we shall save a great number of accentual marks, which is important in printing. We will, therefore, lay down these rules:—

1. In English, German, and Dutch, the accent is on the first syllable of dissyllables, and the antepenultimate of polysyllables.

2. In Spanish and Italian, the accent is on the penultimate or ultimate, according as the word ends with a vowel or consonant.

3. In Hebrew the accent is ultimate.

4. In Arabic, it follows the real rule, just explained.

5. In all other languages, and in all languages not particularly specified when the words are quoted, the accent is on the penultimate.

6. No accent can be placed on a short vowel; hence, when the vowel in the syllable which would be regularly accented is marked short, the accent will be on the next preceding syllable not containing a short vowel, when there is such a syllable, and, when there is not, on the next succeeding syllable, not containing a short vowel. Hence, indĭfərəntli is accented on the last syllable but three, and kəntrĭshən on the penultimate, both against the general rule 1.

7. When we have occasion to mark the position of the accent, we may often save a diacritical mark thus:—The accent can only occur on syllables containing a long or a stopped vowel. When the vowel is long,

place the accent immediately after it, as repli′t=r*i*plīt, dinai′=d*i*ɴai; when the vowel is stopped, place the vowel after the consonants, which will, in that case, invariably terminate the syllable, as withstand′, kontrədikt′. Compare rěprima′nd=rěprimānd.

We shall thus often be able to choose between writing the accent or using a diacritical mark; thus the words

wīknes, fămili, fŏl*o*d,(5) spĕliɴ=wi′knes, fam′ili, fol′*o*d, spel′ɪɴ;

and either mode may be adopted. We prefer the diacritical mark for brevity, as the insertion of the accent adds a type, besides breaking the word into parts, which is rather unpleasant to the eye.

In order to give a specimen of the manner of using the Transition Alphabet with these abbreviating rules, we annex four passages, English, German, French, and Italian, with pronunciation figured. These must not be criticised as specimens of pronunciation, but as specimens of the power given us by this alphabet, to exhibit a *particular* pronunciation, be the same good or bad. If capable of shewing a bad pronunciation, it is capable of shewing a good one, because it contains symbols for all the sounds used in the correct pronunciation, and the error, where there is one—and we expect that hardly any one will read over the following passages without detecting several errors, objective or subjective—arises from a false arrangement of symbols. Thus, if in writing with musical symbols, a person should accidentally use a wrong one, as *b flat* for *b*, he will still write what any musician can read, and what would direct the musician to produce a certain sound. The blunder would simply consist in using a wrong symbol. Hence we apologize for our errors in *pronunciation;* they are our own, and are not chargeable upon our alphabet. We have simply represented those sounds which, on comparing them with the sounds of our key words, appear to us, *to the best of our recollection,* to be those used by Englishmen, Germans, Frenchmen, and Italians, in reading the following passages. The sources of error are, therefore, *twofold:* first, difficulty of appreciating the foreign sounds themselves; secondly, difficulty of remembering in what words these sounds are used, when appreciated. The first error is due to the individual who listens, the second to the vicious orthography usually employed. If such a *musical* orthography prevailed, the harmonies of Bach and the melodies of Mozart would be as effectually lost to the present generation as are, unhappily, the rhythm of Chaucer and the utterance of Shakspere in our own tongue, and those wondrous sounds which charmed the ancients as they flowed from the lips of Homer, Herodotus, or Cicero.

(5.) In fŏlod, and similar words, although fŏl*o* is the pronunciation of *follow,* it may be doubted whether *followed* does not prolong the last syllable, and become fŏlọd.

EXAMPLE I. ENGLISH.

COMMON SPELLING.

From the foregoing sections, we arrive at the theory of a full and perfect alphabet and orthography, of which a few (amongst many others) of the chief conditions are as follows:—1) That for every simple single sound, incapable of being represented by a combination of letters, there be a single simple sign. 2) That sounds within a determined degree of likeness, be represented by signs within a determined degree of likeness; whilst sounds beyond a certain degree of likeness, be represented by distinct and different signs, *and that uniformly*. 3) That no sound have more than one sign to express it. 4) That no sign express more than one sound. 5) That the primary aim of orthography be to express the sounds of words and not their histories. 6) That changes of speech be followed by corresponding changes of spelling. With these principles in our mind, we may measure the imperfections of our own and of other alphabets.—*The English Language*, by R. G. Latham, Professor of the English Language and Literature, University College, London; page 149.

TRANSITION SYMBOLS.(6)

From dhi fórgo'ɪɴ sekshənz, wi əraiv at dhi thiəri ov e ful and pɐrfekt alfəbet and órthŏgrəfi, ov whitsh e fyu (əmɐɴst mĕni ɐ̧dhərz) ov dhi tshīf kəndĭshənz ar az fŏlǫz:—1) Dhat fór ĕvəri simpəl sɪɴgəl saund, inkepəbəl ov biiɴ rĕprizent'ed bai e kombine'shən ov lĕtərz, dhêr bi e sɪɴgəl simpəl sain. 2) Dhat saundz wĭdhin' e ditɐrmind digri' ov laiknes bi rĕprizent'ed bai sains wĭdhin' e ditɐrmind digri' ov laiknes; whailst saunds biyond e sɐrtin digri' ov laiknes, bi rĕprizent'ed bai distiɴt and dĭfərənt sains, *and dhat yu nifórmli*. 3) Dhat no saund hav mór dhan wɐn sain tu ekspres' it. 4) Dhat no sain ekspres' mór dhan wɐn saund. 5) Dhat dhi praiməri ē̆m ov órthŏgrəfi bi tu ekspres' dhi saundz ov wɐrdz and not dhêr histər*iz*. 6) Dhat tshēnjiz ov spītsh bi fŏlǫd bai kŏrispondiɴ tshēnjiz ov spĕliɴ. Widh dhīz prinsipəlz in auo̤r maind wi me mĕzhər dhi impərfekshənz ov auo̤r ǫn and ov ɐ̧dhər alfəbets.—Dhi Iɴglish Lᴀɴgwidzh, by R. G. Lethəm, Profes'ər ov dhi Iɴglish Lᴀɴgwidzh and Lit'ərərtshy*u*r, Yunivɐ'rsiti Kŏlidzh, Lɐndən; pēdzh 149.

EXAMPLE II. GERMAN.

Nur noch zwei Fragen. Wenn wir die Mönchsorthographie nicht hätten, sondern eine bessere, und dann einer jene vorschlüge und zugleich Grundsätze und Zweck anführte; er könnte aber keine andre, als die erwähnten, [nämlich dasz die Orthographie so beschaffen seyn soll, dasz sie nicht in Regeln gebracht werden könne; ihr Regelmäsziges widerartig seyn, und die Anwendung oder Nichtanwendung des mitzuschreibenden Etymologischen keine Gründe haben soll; indem der Zweck ist, die Orthographie, eine Sache, die beynah jedem nothwendig, wie das Sprechen ist, auf alle Weise schwer zu machen], weil es keine andre gibt: würde man ihm darüber nicht wenigstens ein leises Wort zu sagen haben? Und hat man sich selbst keins, wenn man zur Vertheidigung der ersten, und zur Verwerfung der letzteren

Nūr nokh tsvhai frajhən. Vhen vhīr di mɐ̧nkhsōrtogràfi' nicht hĕtən, zondərn ainə bĕsərə, und dàn ainər yənə fǫr'shlû'jhə und tsuglaich Grund'zets'ə und tsvhek àn'fûr'tə; êr kɐ̧ntə abər kainə àndərə, àlz di êrvhēntən [nēmlich dàs di ōrtogràfi' zo bəshàfən zain zol, dàs zi nicht in rejhəln gəbrākht vhêrdən kɐ̧nə; īr rejhəlmèsijhes vhidərārtijh zain, und di an'vhend'uɴ odər nicht'an'vhend'uɴ des mit'tsushrai'bəndən ĕtimologhishən kainə grùndə habən zol; indēm dêr tsvhek ist, di ōrtogràfi', ainə zàkhə, di baina yedəm nǫtvhendijh, vhi dàs shprĕchən ist, auf àlə vhaizə shvhêr tsu màkhən], vhail es kainə àndrə gibt; vhûrdə màn īm darûbər nicht vhenijhstənz ain laizes vhōrt tsu zaghən habən? Und hàt màn zich zelbst kains, vhen màn tsūr fərtai'dijhuɴ dêr êrstən, und tsūr fərvhêrfuɴ dêr letstərən

(6.) As in the English language a vowel is always long or short, and never stopped, before an r which does not *prȩcede* a vowel in the same word, advantage is taken of this circumstance to use the indifferent character before r in such situations; thus, tar, fórm, fɐrm, tir=tār, fōrm, fɐ̧rm, tĭr. Again, the stopped ǫ is not found in English, but is always substituted by the stopped ŏ; we, therefore, use the indifferent character, o, to represent ŏ in those cases in which, by our general rules, it should represent ǫ. These two abbreviations *only* apply to English.

in lautes Geschrey ausbricht; endlich aber müde und heiser zu sich selbst kommt, und dann mit einem halben Gedanken überlegt, wofür, und wowider man denn so geschrieen habe?—KLOPSTOCK.(7)

in lautes gəshrai aus'bricht'; endlich abər mûdə und haizər tsu zich zelbst komt, und dàn mit ainəm hàlbən gədàɴkən ûbərlejht', vhofûr, und vhovhidər màn den zo gəshriə̤n habə?—Klopshtok.

EXAMPLE III. FRENCH.(8)

Un enfant élevé dans un pauvre village, ..revint chez ses parens, et fut surpris d'y voir..un miroir... D'abord il aima son image;.. et puis par un travers bien digne d'un enfant,.. et même d'un être plus grand,.. il veut outrager ce qu'il aime,.. lui fait une grimace, et le miroir la rend... Alors son dépit est extrême; ..il lui montre un poign menaçant,.. il se voit menacé de même... Notre marmot fâché s'en vient, en frémissant,.. battre cette image insolente;.. il se fait mal aux main. Sa colère en augmente;.. et, furieux, au désespoir,.. le voilà, devant ce miroir,.. criant, pleurant, frappant la glace... Sa mère, qui survient, le console, l'embrasse,.. tari ses pleurs, et doucement lui dit;.. "N'as-tu pas commencé par faire la grimace..à ce méchant enfant qui cause ton dépit?".. "Oui." "Regarde à présent: tu souris, il sourit;.. tu tends vers lui les bras, il te les tend de même;.. tu n'es plus en colère, il ne se fâche plus:.. de la société tu vois ici l'emblème;.. le bien, le mal, nous sont rendus."—LAFONTAINE.(9)

ɐn̲ an̲fan̲ elve dan̲z ɐn̲ povrə vilâzh, ..rəvin̲ she se pàran̲, e fú sûrpri d i vwâr..ɐn̲ mīrwâr... d àbōr īl êma son̲ imâzh,.. e pùi pār ɐn̲ tràvêr byin̲ dīnyə d ɐn̲ an̲fan̲,.. e mêm d ɐn̲ êtrə plû gran̲,.. īl vęt utràzhe sə kīl êm,.. lùi fêt ûn grimās, e lə mirwâr lə ran̲... àlōrs son̲ dĕpi ēt ekstrêm; .. īl lùi mon̲tr ɐn̲ pwin̲ mənasan̲,.. īl sə vwa mənase də mêm... no̱trh mārmo fâshe s an̲ vyin̲, an̲ frĕmisan̲,.. bàtrh set imâzh in̲solan̲t;.. īl sə fê màl o min̲. Sa ko̱lêr an̲ o̱gman̲t;.. e, fûrię, o dĕsespwâr,.. lə vwala, dəvan̲ sə mīrwâr,.. krian̲, plęran̲, fràpan̲ la glās... Sa mêr, ki sûrvyin̲, lə konsol, l'an̲brās,.. tari se plęr, e dūsman̲ lùi di;.. "n a tú pa ko̱man̲se pār fêr la grimās,.. a sə mĕshan̲t an̲fan̲, ki ko̱z ton̲ dĕpi?".. "Ui." "Rəgārd a prĕzan̲: tú suri, īl suri;.. tú tan̲ vêr lúi le bra, il tə le tan̲ də mêm;.. tú n e plûs an̲ kolêr, īl nə sə fâshə plû:.. də la sosiete tú vwāz ĭsi l'an̲blêm;.. lə byin̲, lə màl, nu son̲ ran̲dú."—Lafon̲tên.

(7.) *Translation.* Only two questions more. If we had not the monkish orthography, but a better one, and then some one were to propose this to us, and were to quote its principles and objects; and he could not cite any others but those just mentioned, [namely, that the orthography should be of such a nature as not to admit of rules; that what is regular in it should be against its nature, since there are no reasons to show for the writing or non-writing of the etymology; the object being to render orthography (a thing nearly as useful to every one as speaking) in every possible way difficult] because there are no others; should we not have, at least, a word to whisper in his ear? And have we none to whisper in our own, when we break out into loud shouting in defence of the one and rejection of the other, and, at last, tired and hoarse, come to ourselves and reflect, with half a thought, on the wherefore and whereagainst we have been so shouting?

(8.) The original is in verse; to save space, we have printed the words as in prose, distinguishing the termination of a line by two dots, thus, ..

(9.) *Translation.* A child who had been brought up in a poor village,.. returned to his parents' house, and was surprised to find there .. a mirror... At first, he liked his image,.. and then, with a whim well worthy of a child,.. and even of a larger creature,.. he wishes to injure what he is pleased with;.. makes a face at it, and the mirror returns it... His rage then becomes extreme;.. he displays a menacing fist,.. he sees himself menaced in the same manner... Our babe in a passion proceeds, trembling (with anger),.. to beat this insolent image... He hurts his hand. This adds to his rage,.. and, furious, in despair,.. behold him before this mirror,..

EXAMPLE IV. ITALIAN.(8)

Prendi uom rozzo, e comun, fanne un monarca, .. tosto il favor del ciel sopra gli piove : .. tosto divien di sapienza un' arca : .. nella testa di lui s'alloggia Giove. .. Decide, ordina, giudica : un oracolo : tutto a un tratto divien : pare un miracolo. E perciò con ragion trasecolati .. restan quei savi, che un destin felice .. al fianco d'un monarca ha collocati, .. scorgendo in tutto quel ch' ei pensa e dice .. sublime idée, pensier' profondi e nuovi, .. nè sanno dove diavolo li trovi.—Parla un sovrano ? E' come parli un Nume ; .. ode ciascun, pronto obbedisce e tace ; .. nè contradir, nè replicar presume ; .. è legge universal ciò che a lui piace ; .. e par che accomunato abbia con lui .. lo stesso Onnipotente i dritti sui.—Che più ? l' estro gli vien, mi crea ministro, .. e sia pur' io bestia ignorante e sciocca ; .. tutta la monarchia reggo e amministro, .. ho scienza nel cervel, sentenze in bocca. .. Tolta da me la balordaggin prima, .. par ch' altro conio il mio padron m'imprima.—Ciò prova che il monarchico governo .. è d'ogni altro governo il più perfetto ; .. e all' immortal somiglia ordine eterno, .. onde veggiam che l'Universo è retto ; .. ogni bene in se stesso aduna e accoglie, .. e ogni qualunque mal slontana e toglie.—CASTI.(10)

Prendi wòm roddzo e komūn′, fànne ūn monārka .. tòsto īl favo̱r′ del tshyēl sôpra lyi pyove .. tòsto divyēn di sapientsa ūn ārka : .. nella testa di lui sàlloddzhya dzhyove .. dētshide, ôr′dina, dzhyu′dika : ūn orakolo : tutto a ūn tràtto divyēn : pare ūn mirakolo. e pêrtshyô kon ràdzhyōn trasekolati. res′tàn kwei savi, che ūn destīn felītshe .. àl fyànko dūn monārka a kollokati, .. skôrdzhendo in tutto kwel kei pensa e dītshe. .sublime idee, pensyêr′ profo̱ndi e nwôvi, .. nê sànno dôve dyavolo li trôvi.—pārla ūn sovrano ? ê kôme pārli ūn nume ;. .ôde tshyàskūn, pro̱nto obbedishe e tātshe. .nê kontradīr′, nê rĕplikār′ presume .. ê leddzhe univêrsāl′ tshyô ke a lui pyātshe. .e pār ke akkomunato abbya con luï. .lo stesso onnipotente i dritti suï.—che pyu ? lestro lyi vyēn, mi krea ministro, .. e sia pūr io bestya īnyorànte e shyokka. .tutta la monarkia reggo e àmministro. .ô shyentsa nel tshèrvĕl, sententse in bokka .. tòlta da me la balórdàddzhin prima. .pār kàltro ko̱nyo īl mio padro̱n mimprima.—Tshyô prôva ke īl monārkiko govêrno .. ê do̱nyi àltro govêrno īl pyu pèrfetto .. e àl immortāl somilya ôrdine etêrno. .o̱nde veddzhyām ke lunivêrso ê retto ;.. o̱nyi bêne in se stesso aduna e àkkôlye,. .e o̱nyi kwalunkwe màl slontana e tôlye.—Kàsti.

shouting, weeping, striking the glass. .. His mother, who comes up, consoles him, embraces him, .. dries his tears, and softly says to him, .. "Didst thou not begin by making a face .. at this naughty child, who is the cause of thy passion ?" .. "Yes." "Look, now ; though laughest, he laughs ; .. thou stretchest thy arms towards him, he stretches out his to thee ; .. thou art no longer in a passion, he is no longer angry. .. Thou seest here the emblem of the world ; .. the good or ill we do is returned to us."

(10.) *Translation.* Take a man, rude and common, make a monarch of him, .. at once the favor of heaven rains down upon him ; .. at once he becomes a repository of wisdom ; .. in his head Jove lodges, .. he decides, ordains, judges ; an oracle .. in an instant becomes. It seems a miracle.—And therefore it is with reason that they are confounded, .. the sages, that a happy destiny .. has placed at the side of a monarch, .. discovering in all that he thinks and says .. sublime ideas, profound and novel thoughts, .. and know not where the devil he found them . .—Does a sovereign speak ? It seems as if a Deity spoke ; .. each one listens, promptly obeys, and is silent, .. none dares to contradict, nor to reply. .. His will and pleasure is an universal law, .. and it seems as if the Omnipotent himself .. had shared his rights with him.—What more ? The fit seizes him, he makes me minister, .. and even if I were an ignorant and stupid brute .. I rule, and administer the whole monarchy. .. I have sense in my head, and sentences in my mouth ; .. and, clownishness being first removed from me, .. it seems as if my master struck me like a new coin.—This proves that the monarchical government .. is more perfect than any other government, .. and resembles the immortal eternal order .. by which we see the universe is ruled .. It unites and receives all that is good, .. it keeps off and removes all evil whatsoever.

THE

ALPHABET OF NATURE.

PART III. PHONETICAL ALPHABETS.

We have now completed our analysis of spoken sounds, and briefly pointed out how the ultimate elements thus determined may be combined into new compound sounds forming syllables and words. From the difficulty of the subject, it can be no matter of surprise that our conclusions are far from entirely according with those of many Phoneticians who have preceded us. How many these may be we cannot say, but that they have been numerous the reader will perceive when informed that alphabets more or less complete have been furnished by the following *Englishmen*, 1) Dr. Biber, 2) Prof. Clark, 3) Dr. Darwin, 4) Messrs. Fulton and Knight, 5) Rev. H. Henslowe, 6) Sir John Herschell, 7) Sir Wm. Jones, 8) Prof. H. Key, 9) Mr. Knowles, 10) Prof. Latham, 11) Dr. Charles Orpen, 12) Mr. I. Pitman, 13) Mr. Smart, 14) Prof. Wheatstone, 15) Bishop Wilkins, 16) Dr. Young; *Americans*, 17) Dr. Franklin, 18) Abner Kneeland, 19) Rev. E. Rich; *Frenchmen*, 20) De Stains, 21) Thibeaudin, 22) M. de Volney; *Germans*, 23) Prof. Becker, 24) Dr. Rapp, 25) Dr. Kaltschmidt, 26) Friedr. Schmitthenner; *Pole*, 27) Major Beniowski. A full account of the works, in which the first 26 of these alphabets are contained, will be found in the *Phonotypic Journal* for 1844, pp. 133—144, 322—329.

Space does not permit us to take all these 27 alphabets into consideration, but we cannot pass them entirely over, and shall therefore select some of the most important. They fall into two classes; first, those which relate to language generally, as Nos. 3, 5, 7, 8, 11, 15, 16, 20, 21, 22, 24, and 25; and secondly, those which refer to some particular language, as Nos. 1, 2, 4, 6, 9, 10, 12, 13, 14, 17, 18, 19, 27, to English, and Nos. 23, 26 to German. The most complete alphabets of the first class, are Nos. 8, 11, 15, 16, 22, 24; and in the second we may confine ourselves to Nos. 6, 10, 12, and 13.

The differences between the alphabets just cited, and that previously explained under the name of "The Transition Alphabet," resolve themselves into three classes, I.) The discrimination of sounds between which we detect no distinction, II.) The identification of sounds which to us appear dissimilar, and III.) The arrangement of the ultimate elements of speech. To these might be added IV.) The symbolization, but this we consider unimportant, except in the case of No. 12, because no alphabet besides this consists of a series of symbols which are intended to be permanent. In giving some account of these alphabets we shall therefore at once *translate* the symbols into those of the Transition Alphabet, placing two symbols to an element in the IInd case, and subdividing a symbol thus r^1, r^2, in the Ist case; while a ? will be placed where we are doubtful what sound was intended. We shall afterwards say a few words on these differences, and finally enter upon the question of symbolization with reference to Mr. Pitman's Phonographical and Phonotypical Systems.

I. GENERAL ALPHABETS.

1.—*Wilkins.*

First in point of time we must place Bp. Wilkins's very acute analysis of speech, given in his "Essay towards a Real Character and a Philosophical Language," 1688, to which we gladly acknowledge our many obligations.

"In the *causes* of letters there are observable," says he, in p. 359, "A. The ORGANS by which they are formed, either more I., Common; lungs, throat, mouth, nose; or II., Peculiar; 1. *Passive,* [1′ *palate,* (according to the parts 1″ *inmost* or middle, 2″ *foremost*); 2′ *teeth,* (either the 1″ *root* or inner gums, or 2″ *top*); 3′ *lip* (1″ *upper* 2″ *lower*)]; 2. *Active,* [whether the 1′ *tongue,* (according to the 1″ *root* or middle, 2″ *top*) or 2′ *lips*]. B. The ACTIONS of these Organs, whether by I., Appulse, of the 1. *Lips* [either 1′ to one another, or 2′ to the tops of the teeth]; 2. *Tongue,* [in respect of the 1′ *top* of it to the *teeth* (their 1″ *tops,* 2″ *roots* or gums) 2′ *root* or middle of it to the *palate*]; II. Trepidation or vibration, either of the 1. *Lips* or 2. *Tongue* [whether 1′ *top,* or 2′ *root* or middle of it]; III. Percolation of the breath between the 1. *Lips* contracted, or 2. *Tongue* [either the 1′ *top* of it, (applied to the 1″ *tops,* 2″ *roots* of the *teeth*), 2′ *root* or middle of it, applied to the *inward palate.*]

"These I conceive to be all the kinds of actions and configurations which the organs are capable of, in order to speech. What kind of letters are framed by these will appear in the next table.

"All simple letters may be distinguished into such as are; either

"A. APERT and free, according to degrees

a. Greater; styled most properly *vowels*, which may be distinguished into I. *Labial*, being framed by an emission of the breath through the lips contracted; 1. *less*, as o̱, 2. *more*, with the help of the tongue put into a concave posture long ways, the whistling or French û ù; II. *Lingual;* the breath being emitted when the tongue is put into a posture 1. *more concave*, and removed at some distance from the palate ō, ŏ; 2. *less concave*, or plane, and brought nearer to the palate ă, ē (?); 3. somewhat *convex* to the palate ĕ, ē (?).

b. Lesser; being either, I. *Sonorous;* of which it may be said, that they do somewhat approach to the nature of consonants, and are *mediæ potestatis* (possessed of an intermediate power); because when they are joined to any vowel to compose what we call a diphthong, they put on the nature of *consonants*, and when they are not so joined, but used singly, they retain the nature of *vowels*, which is the reason why it hath been so much disputed amongst some learned men, whether they are to be reckoned amongst *vowels* or *consonants*. These may be distinguished into 1. *Labial*, by an emission of the breath through the lips more *contracted* ū, ŭ, w; 2. *Lingual*, when the breath is emitted betwixt the middle of the tongue in a more *convex* posture, and the palate ī, ĭ, y; 3. *Guttural*, by a free emission of the breath from the throat ɐ̱, ɐ̭; II. *Mute*, when the breath is emitted through the organs of speech being in the same position as before, but without voice; to be distinguished as their three preceding correspondents, into 1. *Labial*, wh; 2. *Lingual*, yh; 3. *Guttural*, h.

"B. INTERCEPTED and shut, according to degrees

a. Lesser; which because they have something vowelish in them, are therefore by some styled *semivowels*, being spiritous and breathed, whether I. *Labial;* being pronounced through the 1. *mouth;* [by 1′. *Appulse* of either lip to the opposite teeth, framing v sonorous f mute; 2′. *Trepidation* of the lips like that sound which is used in the driving of the cows, (B), to which there is a correspondent mute, (Bh), sometimes used as an interjection of disdain; 3′. *Percolation* of the breath, betwixt both the lips contracted round-wise, which makes the vocal whistling sound, (vh) to which likewise there is a correspondent mute whistling (fh); but neither of these two last pairs being of use in Language" (but see suprà pp. 104—106, 119), "they need not therefore have any marks or letters assigned to them]; 2. *nose;* by an appulse; either of the lips against one another or against the top of the teeth, framing m sonorous, mh mute. II. *Lingual;* either in respect of {I′ the *top of the tongue* being pronounced through the 1. *mouth*, by [1′ *appulse*, of the top of the tongue to the (1″ *top of the teeth;* the breath being emitted through the middle of the mouth, framing dh sonorous, th mute; 2″. *foremost part of the palate;* the breath being emitted through the corners of the mouth, framing l sonorous, lh mute;) 2′. *Trepidation* or vibration; against the inmost part of the palate, framing r sonorous, rh mute. 3′. *Percolation* of the breath; between the top of the tongue and the roots of the teeth, whether (1″ *subtle*, framing z sonorous and s mute, or 2″. *dense*, framing zh sonorous and sh mute);] and 2. the *nose*, by an appulse of the top of the tongue to the roots of the teeth, framing n sonorous, nh mute; or of II′. the *root or middle of the tongue*, being pronounced through 1. the *mouth*; [by 1′ *Appulse* to the inward palate, framing gh sonorous, kh mute; 2′ *Trepidation*, which will frame a sound like the snarling of a dog, (qh ?), to which there is a correspondent mute, like that motion which we make in hauking, not necessary to be provided for by any letter for language; 3′ *Percolation* of the breath between the root of the tongue and the inward palate (jh ?), to which there is a correspondent mute, which makes a sound like the hissing of a goose (ch ?) not necessary to be provided for by any mark assigned to them for letters;] 2. the *nose;* by an appulse of the root of the tongue to the inward palate, framing N sonorous, and Nh mute.}

b. GREATER; which do most partake of the nature of consonants, and may be styled non-spiritous or breathless, to be distinguished according to the active element of speech into I. *Labial;* intercepting of the breath by closure of the lips, framing b sonorous, p mute; II. *Lingual*, in respect of the {I′. *Top* intercepting the breath, by an appulse to the bottom of the teeth, framing d sonorous and t mute; or II′. *Root;* intercepting the breath by an appulse to the inmost palate; framing g sonorous, k mute."

We have placed queries to A, *a*, II, 2, and 3, for in the examples which

Bp. Wilkins gives, he calls the first the sound in *bate, vale, fate*, &c., &c.; the second that in *beate, veale, feate*, &c., &c., the latter being fictitious spelling. We know, indeed, that these words are pronounced with ē, and therefore the former had ê, perhaps; if so, the Bishop's classification of the short (*i. e.* stopped) and long vowels would be—ŏ ō, ă ê, ĕ ē, ĭ ī, —o̱, ŭ ū, ɐ̭ —; not admitting short (stopped) o̭, or long ɐ̱. He objects to marking the difference between short (stopped) and long vowels. The improper diphthongs he forms with i and u, as well as the proper ones. Using o, a, e, i, o̱, u, ɐ, for his seven vowel characters, he represents our ōi by oi; our āi by ai, our ai by ɐi; *aw* (as distinct from our ō) by ou; the *ew* in *hew* by eu (which he thus distinguishes from yū); and our au *(ow* in *owl)* by ɐu; while ii=*ye*, iu=*you*, uu=*woo*, ui=*we*. He has given, as a specimen of his alphabet, the Lord's Prayer and Apostle's Creed, which we subjoin, translated (using the seven vowel symbols just proposed, and the rest as explained in the alphabet), as a specimen of the pronunciation of his day. There seem to be some oversights in the mode of spelling, but, with the exception of two obvious misprints (dhɐn *for* dhɐin, *and* badi *for* bodi), we have transcribed the passages *literatim*.

1. ɐur fadher huitsh art in heven, halloëd bi dhɐi nam, dhɐi kiɴdɐm kɐm; dhɐi uill bẹ dɐn; in erth az it iz in heven, giv ɐs dhis dai ɐur daili bred, and forgiv ɐs ɐur trespassez az ui forgiv dhem dhat trespas against ɐs, and led ɐs not intu temptasion, bɐt deliver ɐs from ivil, for dhɐin iz dhe kiɴdɐm, dhe pɐuër and dhe glori, for ever and ever, Amen.

2. ɐi biliv in God dhe fadher olmɐiti maker of heven and erth, and in Dzhesɐs Krɐist his o̱nli sɐn ɐur Lord, huu uaz konseved bɐi dhe ho̱li Go̱st, born of dhe Virgin Mari, sɐffered ɐnder Ponsiɐs Pɐilat, uaz kriusifiëd ded and bɐriëd. hi dessended intu hel, dhe thɐrd dai he ros again from dhe ded. hi assended intu heven, huer he sitteth at dhe rɐit hand of God dhe fadher, from huens he shal kɐm to dzhɐdzh dhe kuik and the ded. ɐi biliv in dhe ho̱li Go̱st, dhe ho̱li katho̱lik tshɐrtsh, dhe kommiunion of Saints, dhe forgivnes of sinz, dhe resɐrreksion of dhe bodi and lɐif everlasting, Amen.

2.—*Young.*

Next to this alphabet of Bp. Wilkins, that of Dr. Young is, among those furnished by Englishmen, the most comprehensive. He divides the letters into 8 classes, thus (*Lectures*, vol. 2, p. 276):—Class 1. "Pure vowels consisting of a vocal sound formed in the larynx, not interrupted by the tongue and lips, nor passing in any degree through the nose." 1, ə; 2, ā; 3, long â (?), short à; 4, long ō, short ŏ; 5, o̭ (?); 6, o̱; 7, ɐ̬^{1}; 8, ɐ̬^{2}; 9, ɐ̭; 10, long ū, short ŭ; 11, û^{1}; 12, û^{2}; 13, ī; 14, ĭ;

15, ē; 16, ĕ; 17, ê. Class 2. "Nasal vowels consisting of a vocal sound, passing, without interruption, through both the mouth and nose." 18, an̲; 19, on̲; 20, ɐn̲; 21, ùn̲ (?); 22, in̲. Class 3. "Pure semivocals, consisting of a vocal sound, much impeded in its passage, yet capable of being prolonged, not passing through the nose." 23, l; 24, l'; 25, lh; 26, r^{1}; 27, r^{2}; 28, v; 29, dh; 30, gh, jh; 31, z; 32, zh. Class 4. "Nasal semivocals consisting of a vocal sound, stopped in the mouth, and passing only through the nose." 33, m; 34, n; 35, ɴ. Class 5. "Mixed semivocals consisting of a vocal sound, much impeded in its passage through the mouth, and passing partly through the nose." 36, n'. Class 6. "Explosive letters consisting of a vocal sound, stopped in its passage." 37, b; 38, d; 39, g. Class 7. "Susurrant or whispering letters having no vocal sound, but capable of being continued." 40, h; 41, f; 42, th; 43, kh, ch; 44, s; 45, sh. Class 8. "Mute letters having no vocal sound, and incapable of being sounded alone or continued." 46, p; 47, t; 48, k.

We have placed a query to 3, for the two instances cited are French, *âme, femme*, which are allowed to rhyme in French poetry, although properly pronounced âme, fâm. No. 5, o̭; the examples are *homme de robe*, which some pronounce ŏm də rŏb, and others o̭m də ro̭b, which we believe to be more correct. Nos. 7 and 8, ɐ̬^{1} and ɐ̬^{2}; the examples to ɐ̬^{1} are *jeu, œil*, and to ɐ̬^{2} *jeux, nœuds;* to our ear all are pronounced with ɐ̬, thus, zhɐ̬, ɐ̬il', zhɐ̬, nɐ̬. Nos. 11 and 12, û^{1}, û^{2}; the example for û^{1} is the German *lügen*, that for û^{2} the French *une laitue*, to which is added—"In Norfolk and in Devonshire the English u is sometimes pronounced û^{2}." We believe the German *ü* and French *u* to be properly identical, but in many parts of Germany the *ü* is allowed to approach ī much more nearly than the French ever allow their *u* to be pronounced; perhaps it is this which has occasioned the distinction to be made by Dr. Young. No. 21, ùn̲, the nasal sound corrsponding to û^{1}, and not considered in the Transition Alphabet. We have no proper idea of the sound; Dr. Young says, "The erse term for a calf is lhùn̲ə, as pronounced in Rossshire."

The diphthongs are denoted by a vinculum drawn over the diphthongising vowels, and y and w are dispensed with, ĭ and u being used. Our three diphthongs ai, ōi, au, become ə̅ī̅, ō̅ĭ̅, ō̅u̅. The following short example is translated from Dr. Young's symbols, the distinctions of long and short being made only where he makes them :

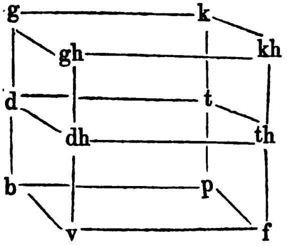
"hu̅ĕ̅n lɐ̬vlĭ u̅ɐ̬̅u̅mən stūps tə fŏlĭ,
ənd fəindz tu lēt dhət men bĭtre̅ĭ̅,
¿ hu̅o̅t tshār^{2}m kən sudh hər^{2} melənkŏlĭ ?
¿ hu̅o̅t ar^{2}t kən u̅ə̅ĭ̅p hər^{2} gĭlt əu̅e̅ĭ̅ ?

"Some would read, in the first line, tŭ, and not tə."

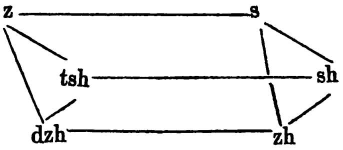
3.—*Key*.

Prof. Key can hardly be said to take the vowels into consideration, as he only figures five, namely, ī, ē, ā, ō, ū. His alphabet scheme (*Penny Cyclopædia*, Art. Alphabet) is chiefly remarkable for his proposed arrangement of the consonants. He adopts the old grammatical distinction of *medials* (g, d, b), *tenues* (k, t, p), and *aspirated* letters, discriminating, however, in these (what is not done by the older Latin and Greek grammarians) the "middle aspirates" (gh, dh, v) from their "delicate relatives" (kh, th, f). He finds a similar relation among the sibilants, and calls y and w letters *sui generis* (of a peculiar kind). His tabular arrangement is calculated to display these relations, the parallelopipedon being used for the first twelve consonants just named, a prism for the sibilants, a straight line for the liquids, and another for the vowels; thus,

1. *Consonants.*



2. *Sibilants.*



3. *Liquids.*

r l n m

4. *Vowels.*

y | i e a o u | w

We may mention that, for uniformity, he represents v, f, by *vh*, *ph*; tsh by *zh* (this is singular); and dzh, zh, by *j Eng.* and *j Fr.*

"In the preceding parallelopipedon, the three horizontal planes, beginning from above, represent the guttural, or palatal, the dental and labial letters. The front vertical plane includes the aspirates, that at the back the non-aspirates. The left vertical comprehends the medial letters, that on the right the *tenues*. Every letter is, of course, at the intersection of three of these planes, and may be defined accordingly."

4.—*Orpen*.

Dr. Charles Orpen (*Pestalozzian Primer*) confines himself nearly to the English vowels, which he arranges thus:—1, b*ee*; 2, *air*; (2½, br*ea*d); 3, b*aa*; (3½, pap*a*); 4, j*ou*rney; 5, *awe*; 6, *owe*; 7, w*oo*; (7½, f*eu*). What the distinction between 3 and 3½ may be, we have not been able to discover. Another example of 3 is the exclamation *ah!*

and it is said to be the name of the first letter of the alphabet according to Irish pronunciation. 3½ is also illustrated by sh*a*'n't, b*ar*, mamm*a*. Perhaps Dr. C. O. means one for ā, and the other for â, but his examples are not sufficient to determine. He makes ĭ short of 1; ă of 3; ŏ of 5; ŭ of 7; but calls 4 ɐ̭, identifying it with b*u*t. His vowels may, therefore, be stated pretty accurately as being

1, ī. *i*, ĭ; 2, ē, ê; 2½, ĕ; 3, ā^1, ă; 3½, ā^2; 4, ɐ̱, ɐ̭; 5, ō, ŏ; 6, o̱;
7, ū, ŭ; 8, ɐ̬.

His consonants are shown by the following table (p. 167), in which the vowels are also introduced. For convenience we have used the Roman numerals and accented Arabic figures in place of the following sentences:

I. "Mechanisms of the movements, and postures of the different parts of the mouth and throat, by which the material of speech, viz., 1st, mere non-vocal breath, or, 2nd, vocalized breath or voice, is modified in its expiration, or exit, through the mouth or nose."

II. "Oral Consonant Powers; affecting the sound of the Exit of—1st. mere non-vocal breath,—or—2nd. vocalized breath, or voice,—through the mouth. In all these, the air is prevented, either wholly, or partially, from escaping through the nose, by the soft palate being raised, so as either entirely, or very nearly, to close up the posterior nostrils, or the posterior openings into the nose, from the throat."

III. "Nasal Consonant Powers; affecting the sound of the Exit of—1st. mere non-vocal breath,—or—2nd. vocalized breath, or voice,—through the nose. In all these, the air is allowed to escape through the nose, by the soft palate being lowered, so as to leave open the posterior opening into the nostrils, from the throat."

1°. "Organs concerned in the mechanism of their articulation, either by 1st. Position;—which may be either,—a. Apposition or Contact;—or—b. Juxta-position, or Approximatedness;—or by—2nd. Motion;—which may be either,—a. Approach; b. Separation; c. Vibration.

2°. "Consonant Powers; firmly and quickly intercepting, or permitting, the exit of mere non-vocal oral breath."

3°. "Consonant Powers; firmly and quickly modifying the exit of mere non-vocal oral breath."

4°. "Consonant Powers; softly and slowly intercepting, or permitting, the exit of oral vocalized breath, or voice."

5°. "Consonant Powers; softly and slowly modifying the exit of oral vocalized breath, or voice."

6°. "Consonant Powers; firmly and quickly modifying the exit of mere non-vocal nasal breath."

7°. "Consonant Powers; softly and slowly modifying the exit of nasal vocalized breath, or voice."

1′. "Two lips, vibrating, alternately separated, by the current of air, and touching."

2′. "Two lips separated, as little as possible, in the centre, and forced suddenly wider asunder, by the jerk of the breath."

3′. "Two lips touching firmly, as in p final and mh, or gently as in b final and m; or separated quickly as in p initial or medial and mh; or slowly, as in b initial or medial, and m."

4′. "Lower lip pressed firmly, as in f, or gently as in v, against the edges of the upper front row of teeth."

5′. "The tip of the tongue, pushed forward, between the two front rows of teeth, and pressed firmly as in th, or gently as in dh, up against the edges of the upper row."

6′. "The tip of the tongue, lying against the back of the lower front teeth, while its sides are pressed firmly as in s, or gently as in z, against the upper side-teeth, and while the edges of the lower front row of teeth are a little farther back and behind those of the upper, and nearly touching."

7′. "The tip of the tongue raised behind, but not touching, the upper front teeth, while its sides are pressed firmly as in sh, or gently as in zh, against the side upper gums, and while the edges of the lower front row of teeth are pushed forward a little, so as to be exactly under those of the upper front row, and nearly touching, and the two lips pushed forward a little."

8′. "The whole of the edges of the tip and sides of the tongue, pressed firmly as in t final and nh, or gently as in d final and n, against the whole of the front and side inner upper gums, or separated quickly, as in t initial, or medial, and nh, or slowly, as in d initial or medial, and n, from them."

9′. "The whole of the sides of the upper surface of the tongue pressed against the whole of the sides of the hard palate, while the tip is a little bent down, and a narrow channel left along the centre of the whole tongue between it and the hard palate, from back to front, which channel is forced suddenly wider open, by the jerk of the breath."

10′. "The tip of the tongue, fixed firmly, as in lh, or gently as in l, against the inner upper front gum, while its two sides do not touch the side upper gums, and so are made to vibrate a little, with the double exit of air round them."

11′. "The tip of the tongue curled upward and backward, firmly, as in rh, or gently as in r, towards the arch of the hard palate, while its sides are pressed firmly, as in rh, or gently as in r, against the sides of the hard palate, and its tip is made to vibrate quickly as in rh, or slowly as in r, by the exit of air over it."

12′. "The surface of the root of the tongue separated a very little from the soft palate which vibrates a little, quickly in kh, and slowly in gh, by the exit of the current of air." [? When there is *vibration* is not one of the letters G Gh or qh produced ?]

13′. "The whole surface of the root of the tongue, and the whole soft palate, touching firmly as in k final and Nh, or gently as in g and N, or separated quickly as in k initial or medial and Nh, or slowly as in g initial or medial and N."

14′. "The surface of the root of the tongue and the soft palate, widely separated asunder, by the jerk of the breath from the lungs."

15′. "The mechanism of these double consonant powers is merely a rapid combination of those of their constituent simple ones, viz :—of 19 with 17, and 20 with 18."

16′. "The mechanism of these double consonant powers is merely a rapid combination of those of their constituent simple ones, viz. :—of 35 with 15, and 36 with 16; 35 with 17, and 36 with 18."

The common Arabic figures shew Dr. C. Orpen's alphabetical order.

I.	II.				III.	
1°	2°	3°	4°	5°	6°	7°
1′		1.Bh		2.B		
2′		3.w		4.5.6.		
3′	7.p		8.b		9.mh	10.m
4′		11.f		12.v		
5′		13.th		14.dh		
6′		15.s		16.z		
7′		17.sh		18.zh		
8′	19.t		20.d		21.nh	22.n
9′		23.y		24—28		
10′		29.lh		30.l		
11′		31.rh		32.r		
12′		33.kh		34.gh		
13′	35.k		36.g		37.Nh	38.N
14′		39.h		40.		
15′	19 & 17.tsh		20 & 18.dzh			
16′	35 & 15.ks		36 & 16.gz			
	35 & 17.ksh		36 & 18.gzh			

The numbers 4. 5. 6. 24—28. 40. which are left blank in the table, shew where Dr. C. O. considers the vowels sounds which he has previously numbered 7. 6. 5. 1. 2. 2½. 3. 3½. 4. respectively, are to be inserted.

5.—*Rapp.*

As a full account of M. de Volney's alphabet has been inserted in the *Phonotypic Journal* for 1844, pp. 110—114, we shall conclude our description of the alphabets of the first class by presenting that of Dr. Rapp, while we regret that we are obliged to make our account so very brief. The great assistance which we have derived from his valuable and extensive work, *Die Physiologie der Sprache*, 4 vols. 8vo., pp. 1200, is shown by the frequent reference made to it in the preceding pages.

He traces the vowels from one single undeveloped sound, ə, which, when developed, becomes *a*. This developed *a* he conceives to stand precisely in the middle between the two extremes, or *poles*, *i* and *u*, of which *i* is termed the *positive*, and *u* the *negative* pole. The vowels now assume two directions, one towards *i*, and the other towards *u*, these being the extreme tones, while *e*, *o*, lie between them and *a*. "We thus arrive," says Rapp, (vol. 1, p. 23), "at the five well-known principal vowels, *a*—*e*, *i*—*o*, *u*," all considered short, but capable of being prolonged or stopped. "But whilst," continues he, "*e* and *o* allow of being elevated to *i* and *u*, they also admit of depression, so that *e* becomes *é*, and *o* becomes *ō*. The whole of these phenomena may be connected thus: the two polar directions of the vowel system, reckoned from *a*, may be considered as a continuous line passing through an infinite number of intermediate points or stages, until it arrives at the extremities *i* or *u*. Upon this scale, however, three stations have been established, as easily recognizable and practically useful; for the positive series, *a*, *é*, *e*, *i*, describes a narrow semicircle in the mid-region of the mouth, while the negative series, *a*, *ō*, *o*, *u*, seems to describe a large semicircle about the former. From this relation it follows that *i* and *u* alone can be properly said to be absolutely fixed points, and that all the other vowels are only arbitrarily placed in the scale, and are removable either upwards or downwards. We evade this difficulty in practise by the aid of intermediate, or half vowels. Thus, between *a* and *é*, we have the English short [stopped] ă, between *é* and *e*, the French è [?], between *e* and *i*, the Dutch sharpened [stopped] *i*, in *ik*, [? ì]; between *a* and *ō*, the *a* [? *á*] as usually pronounced in Saxony; between *ō* and *o*, the Italian open *ó*, the Danish aa, and Swedish å; between *o* and *u* is the Italian o stretto (*ǫ*), and the Danish and Swedish long o; also the Polish ó, with the acute accent. Thus far the investigation may be followed by the ear; no human organ will, however, be able to appreciate the slight intervals by which, in different regions, any single vowel is raised or depressed a comma in the scale; and it is sufficient for us to have convinced ourselves that the circle of vowels does not consist of absolute phenomena, but is a living scale, which can only be problematically divided by assumed points. Hence there is no sense in disputing as to which is the purest *e*, *o*, *é*, or *ō*, but, perhaps, there may be in the investigation of the purest *i* or *u*; and it is very probable that some organs may pronounce these sounds more purely or energetically than others. With this vocal circle, many, or, perhaps, the greatest part of the languages in the world, are content. But there is a third series of vowels, which, because it proceeds in the middle, between the other two (the positive and negative) series, cannot be better designated than as the *middle* series of vowels. The character is undecided—*chiaroscuro*, darksome and mysterious, like all middle things, and mongrels. The middle vowel between *e* and *o* is, as is well known, *p*, and that between *i* and *u*, is *ú*. But since this series takes part in the whole development of the others, it must also be considered as continuous, from the point of indifference to the extremity *ú*." He thus proceeds to class *ɒ* (considered as a short vowel, and different from ə) below *ʔ*, and the sound we have represented by *ŏ*, in p. 51, above *p*, and next below *ú*.

Dr. Rapp next considers the nasal vowels, and doubts about there being any corresponding to the poles *i* and *u*, although he thinks that they may be found in Portuguese. The nasal of *e* easily becomes that of *é*, which he takes as synonymous with our iṉ; the nasal of a is our aṉ, and that of *o*, our oṉ, that of *ɒ*, our ɒṉ. As Dr. Rapp considers other nasals, we shall represent his nasals by attaching ṉ to the short vowel characters used in the rest of his scheme; by this means *é*ṉ=iṉ; *ɒ*ṉ=ɒṉ; *o*ṉ=oṉ; *a*ṉ=aṉ; and *ō*ṉ=ōṉ, perhaps.

Dr. Rapp arranges his vowels in the following schemes :—

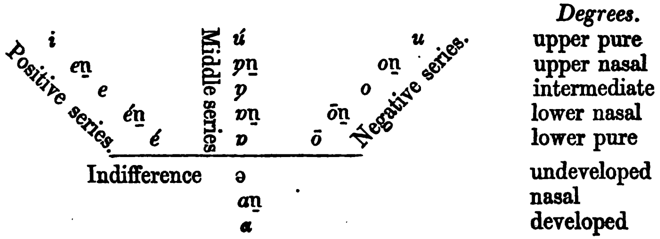
SCHEME 1. *Pure Vowels.*

i *ú* *u*
e *p* *o*
é *ɒ* *ō*
ə
a

SCHEME 2. *Nasals.*

*e*ṉ *p*ṉ *o*ṉ
*é*ṉ *ɒ*ṉ *ō*ṉ
*a*ṉ

SCHEME 3. *Pure Vowels and Nasals Combined.*



We regret that we cannot follow Dr. Rapp through his long dissertation on the diphthongs, nor would it be possible to render his theory clear by an abridgement. No one, however, who wishes to prosecute the study of Phonetics will fail to possess and study this learned treatise.

The Consonant Table follows, and those signs which differ from our own, will be explained immediately afterwards.

Dr. Rapp's Table of Consonants.

	Labial	Labial Lingual	Dental	Dental Lingual	Lingual	Palatal Lingual	Palatal	Guttural
I. Exploders. 1. Indifferent	π	π_τ		τ		κ_τ	κ	ɥ
2. Weak side a. Soft Exploders	b	b_d		d		g_d	g	
b. Spirants α. First class	v	v_{dh}		dh		G_{dh}	G	
β. Second class	vh						y	h
3. Strong side a. Hard Exploders	p	p_t		t		k_t	k	
b. Aspirates	f		th^1 | th^2 th_1 | th_2		z | s z' | s' zh | sh		ch^1 | jh^1 ch^2 | jh^2 |	kh | gh
II. Impeders 1. Nasals	m	m_n		n		N_n	N	
2. Liquids a. L	L		l^1		l^2		l'	
b. R	r_v		r_{dh}	r	r_{zh}			qh

The π, τ, κ of this table were explained in p. 118. By π_τ Dr. Rapp represents a consonant intermediate to π and τ, and resembling π more nearly than τ. Similarly κ_τ is a consonant between τ and κ, and resembling κ rather than τ, and similarly for b_d, &c. These he does not give as really existing consonants, but as possible.

There are four consonants represented by th. Of these th^1 is our *th* in *th*in; and th^2 is the Spanish z, which we are not able to distinguish from the former (see suprà, p. 120); th$_1$ is a thicker pronunciation of th^1, "produced," says Dr. R., "by placing a large portion of the tongue, instead of its point merely, against the upper teeth," and th$_2$ is a corresponding variation of th^2. On the varieties z s, z' s', zh sh, see suprà, p. 120, under S s. In the aspirates, palatal and guttural divisions, we have ventured to enlarge on Dr. Rapp's consonant table, in order to include some letters which he only cursorily mentions in vol. 1, p. 69. The letters ch^1, jh^1, are those which we have described in pp. 109, 121, under the forms ch, jh, simply; while ch^2, jh^2, are peculiar intermediate consonants which Dr. R. detects as auxiliary consonants in Danish and modern Greek, although unknown to us in the latter. The other letters kh, gh, are those already so denoted by us. Dr. R. in his table only gives ch^1, ch^2, kh, and says that it is difficult to distinguish the spoken from the whispered consonants in this division.

The L he divides into two, the positive l^2, spoken towards the back of the throat, and the negative l^1, spoken near the teeth. The former, l^2, generates the weakened l', and the latter, l^1, the Polish ʟ. These l^2 and l^1 are constantly occurring in all languages, the latter, l^1, after indifferent or negative vowels *(*ə, *a ō, o, u)*, the former, l^2, after positive vowels *(é, e, i)*. When, therefore, there is a tendency to pronounce one or the other, without regard to the preceding vowel, either that vowel is changed, or the L itself is changed or lost; thus l^2 leads from l' to *i* or y, and l^1 from ʟ to *a* or *ō*. The former case we see exemplified in the French pronunciation which changes l^2 to yh in *fille*=fīyh, and omits it in *brillant*=brīyaŋ (suprà, p. 128), and in the Italian language which transforms the Latin *plano*, *blanco*, into pyān*o*, byàɴk*o*; the latter is the case in the change of *psalm*, *walk*, (once perhaps psàlm, wàlk, or vhàlk,) into sām, wōk. The R has almost a similar division, but the pure r occurs in this case. The r$_{zh}$ is, Dr. R. supposes, the pure Polish rz (see suprà, p. 125).

Although this alphabet scheme contains many letters omitted both by ourselves and others, yet it has its omissions likewise, among which we need only particularly notice the English w, of which Dr. R. says, when speaking of vh (vol. 1, p. 61), "if we continue to soften the effect of vh we shall come to the English w, which, however, is nothing but a pure vocal prefix of the vowel *u (ein reiner Vocalvorschlag des Vocals u)*."

With this imperfect description of the early portion of the greatest phonetical work yet produced, we close our account of general alphabets.

II. ENGLISH ALPHABETS.

There are three questions to be solved concerning a particular phonetic alphabet of the English language.

1st. ¿ What are the elementary sounds in that language?

2nd. ¿ How shall they be symbolized?

3rd. ¿ Is it possible or expedient to bring a new and correctly phonetical alphabet into common use?

1st. As far as we have observed, the following appears to be the alphabet in actual use among English speakers, those excluded whose pronunciation is decidedly provincial:—

Long Vowels. ī, — ē, ê, ā, ō, ɐ̱, o̱, ū.
Short Vowels. *i*, *ί*, *e*, — — ō, ə, *o*, *u*.
Stopped Vowels. ĭ, — ĕ, — ă, ŏ, ɐ̬, — ŭ.
Proper I Diphthongs. ei, ăi, ai, ōi.
Proper U Diphthongs. au, o̱u.
Quasi-Diphthongs. i̩ə, uə.
Breathing. ɥ, h, (θ ?).
Spoken Consonants. b, d, g; w, v, dh, z, zh, y; r, l; m, n, ɴ.
Whispered „ p, t, k; wh, f, th, s, sh, yh; - -; (mh, nh, ɴh ?)

With regard to the vowels, we may observe that *i* occurs at the end of some words as *family*, *quantity*, when it is the next syllable but one to an accented syllable; but when it should immediately follow the accented syllable, and be preceded by a spoken continuous consonant, it is usually transformed into *ί*, as *carry*, *merrily*=kărί, mĕrίli. The general ear, however, recognizes no difference in these two cases, and the pronunciation of various speakers is so uncertain that we may well dispense with *ί* as one of the elements of the alphabet (see suprà, p. 24). Many even of our most careful speakers use ei for ē in such words as *day*, *may*, *pain*, and generally when the vowel is accented, and either ends a syllable or precedes a spoken continuous consonant. Strict orthoepy, however, does not recognize ei, and therefore this diphthong may be omitted. Before r we never hear ē pronounced by good speakers, who invariably substitute ê for it. But when the division of the syllables keeps the ē distinct from the r the pure ē is pronounced (unless it degenerates into ei) thus, *hair*, *hayrick*=hêr, hērĭk. From this sound air=êr, the dissyllabic ēər must be carefully distinguished. The vowel *ō* seldom occurs; *august*, *austere*, *authentic*, *authority*=ōgŭst, ōstīr, ōthĕntik, ōthŏr*iti*, are almost the only instances in our language where it does not precede r, and then, in the prefix *for*=fōr, as *forgive*, *fortuitous*, it often degenerates into ə, thus, fərgĭv, fərtyūitɐ̬s. The vowel ɐ̱ is only found before r, and this seems to be the case in Swedish also, so that it would appear in these two languages to have been evolved from other letters by the action of r. The r is, however, generally suppressed after ɐ̱ by speakers in London and the south of England, so that the pure ɐ̱ is frequently heard, though seldom recognized. Among the diphthongs, ei, o̱u, though frequently heard, are utterly disowned; the pure ē, o̱, being always, by courtesy, presumed to have been spoken; āi is only found in the affirmative *aye*, but some call this ē, others ei, and others ōi, and, finally, others call it ai: there seems no possibility of fixing which pronunciation is best; ōi is rare, but acknowledged. The *aye* (meaning ever) is called by some ē, or ei; and by others āi. The effect of the letter r upon any preceding vowel is very marked; in accented syllables, it changes ī into iə, ē into ê, ū into uə, and obliges ai and au to become aiə, auə; ōi is not found before r. Whether o̱, before r, becomes oə, or is changed into ō, or even ô, is a doubtful point. To us, o̱ seems always (or, by most speakers) to be changed into ō; and the attempt to preserve o̱ pure, changes it into o̱ə, which is dissyllabic. Some persons pronounce eə for ê before r. These effects of r are due to the great tendency which Englishmen have to make it a very faint guttural, sometimes approaching ə, and sometimes ɢ, and are, therefore, confined to the English language. It is only when r follows a vowel, and is not succeeded by one, that this effect occurs. This tendency, however, is held by most persons to be a vice of pronunciation, and we, therefore, do not admit a sign for this second r (although Dr. Young does, see above, I., 2); and still less would we discriminate the English gently trilled r from the foreign rough lingual rattle. The position of the r, with respect to the vowels, is sufficient to show when it has the tendency thus spoken of, and we would not recommend the use of even a diacritical mark to point where it occurs. The ɥ is inaudible to most listeners, and may, therefore, be omitted as an element; and so may 0, which can always be represented by a dash —; perhaps the dash may be considered as the recognition of this element. Again, it may be considered doubtful whether wh, yh, are distinguishable from hw, hy—at any rate, in our language. We may take the benefit of the doubt to exclude them, as also the letters mh, nh, ɴh (p. 123.) After these reductions, the number of undisputed elements in our language become

Long Vowels. ī, ē, ê, ā, ō, ɐ̱, o̱, ū. . . . .= 8
Short „ *i*, *e*, — — *ō*, ə, *o*, *u* . . . . = 6
Stopped „ ĭ, ĕ, — ă, ŏ, ɐ̮, — ŭ. . . . .= 6
Breathing. h . . . . = 1
Spoken Consonants. b, d, g; w, v, dh, z, zh, y; r, l; m, n, ɴ=14
Whispered „ p, t, k; - f, th, s, sh, -; . . . . . .= 7

Total . . 42

That is, excluding the diphthongs, as being compound elements, and, therefore, capable of being represented by one or more existing symbols, the total number of elements is 42. We will now examine the results obtained by other investigators.

1.—*Herschell.*

Sir John Herschell's alphabet consists simply of a synoptic table, given in his article SOUND, so often referred to at the beginning of this essay. It is as follows:—

" *Vowels.*

1. ¯ R*oo*k; J*u*lius; R*u*de.; P*oo*r; W*o*mb; W*ou*nd; *Ou*vrir (Fr.)
   ˘ G*oo*d; C*u*shion; C*u*ckoo; R*u*nd (Germ.); G*u*sto (Ital.)
2. Sp*u*rt; Ass*e*rt; D*i*rt; V*i*rtue; D*o*ve; D*ou*ble; Bl*oo*d.
3. H*o*le; T*oa*d.
4. ¯ *A*ll; C*au*ght; *O*rgan; S*ou*ght; Br*o*th; Br*oa*d.
   ˘ H*o*t; C*o*mical; K*o*mmen (Germ).
5. H*a*rd; Br*a*ten (Germ).; Ch*a*rlatan (Fr.)
6. L*au*gh; T*a*sk.
7. L*a*mb; F*a*n; Th*a*t.
8. H*a*ng; B*a*ng; Tw*a*ng.
9. H*a*re; H*ai*r; H*ei*r; W*e*re; P*ea*r; Hi*e*r (Fr.); L*eh*ren (Germ.)
10. L*a*me; T*a*me; Cr*a*ne; F*ai*nt; L*ay*man; M*é*me (Fr.); St*ä*dchen (Germ.)
11. L*e*mon; D*ea*d; S*ai*d; *A*ny; *E*very; Fr*ie*nd; B*e*sser (Germ.); *E*loigner (Fr.)
12. L*i*ver; D*i*m*i*n*i*sh; Pers*e*vere; B*e*lieve.
13. P*ee*p; L*ea*ve; Bel*ie*ve; S*ie*ben (Germ.); Coqu*i*lle (Fr.)
14. s; *s*ibilus; *c*ipher; the last vowel, and the first consonant.

True Diphthongs.

1. L*i*fe. The sounds No. 5 and No. 13, slurred as rapidly as possible, produce our English *i*, which is a real diphthong.
2. Br*ow*; Pl*ou*gh; L*au*fen (Germ.) The vowel sound No. 5 quickly followed by No. 1.
3. *Oi*l; K*äu*en (Germ.) No. 4 succeeded by No. 13.
4. Reb*u*ke; *Yew*; *You*. No. 13 succeeded by No. 1.
5. *Yo*ke. No. 13 succeeded by No. 3.
6. *You*ng; *Yea*rn; H*ea*r; H*e*re. No. 13 succeeded by No. 2, more or less rapidly.

" The consonants may be generally arranged in three classes: sharp sounds, flat ones, and indifferent, or neutral; the former two having a constant relationship, or parallelism to each other; thus, SHARP CONSONANTS—S, *s*ell, *c*ell; σ (as we will here denote it,) *sh*ame, *s*ure, *sch*irm (Germ.); θ, *th*ing; F, *f*right, enou*gh*, *ph*antom; K, *k*ing, coin, *q*uiver; T, *t*alk; P, *p*a*p*a.

FLAT CONSONANTS—Z, *z*enith, ca*s*ement; ζ, plea*s*ure, *j*ardin (Fr.); δ, the *th* in the words *th*e, *th*at, *th*ou; V, *v*ile; G, *g*ood; D, *d*uke; B, *b*a*b*e.

NEUTRAL CONSONANTS—L, *l*i*l*y; M, ma*mm*a; N, na*nn*y; ν, ha*ng*; to which we may add the nasal N, in *gnu*, *Ætna*, *Dnieper*, which, however, is not properly an English sound. R, *r*attle; H, *h*ard.

COMPOUND CONSONANTS—C, or Tσ, *ch*ur*ch*, *c*icerone (Ital.), and its corresponding flat sound, J, or Dζ, *j*est, *g*ender; X, e*x*treme, Xer*x*es; ξ, e*x*asperate, e*x*alt, *X*erxes; &c., &c."

On this Table, we may remark, first, that counting each subdivision of the vowels Nos. 1 and 4 as separate vowels, and rejecting No. 14, (which is also reckoned among the consonants), the diphthongs, and compound consonants, we have 15 vowels, 7 sharp consonants, 7 flat consonants, and 6 neutral consonants; total, 35. No notice is taken of the short vowel, as distinguished from the stopped. In two instances only (Nos. 1 and 4) is the stopped vowel even paired with a long one. In No. 1, the word *rook* contains a stopped, and not a long vowel. No. 2 contains ɐ̱ in the four first words, and ɐ̭ in the three last. No. 4, the word *kommen* is as frequently pronounced with o̭ as ŏ. No. 6, in *laugh*, *task*, the vowel is not generally distinguished from ā, and when it is, it becomes à—a sound not properly English, although heard, we believe, in Scotland. No. 8 appears to be indistinguishable from No. 7; at any rate, if it be considered as a peculiar nasal, similar varieties of ĭ, ŏ, ɐ̮, for the sounds in *sing*, *song*, *sung*, should have been given. In the examples of No. 10, *méme*=mêm, and not mēm; and *stădchen*=shtĕdchən, and not shtēdchən;—that is to say, *méme* should have been placed to No. 9, and *stădchen* to No. 11. The *e* in the penultim of the last two examples to No. 12, is *i*, and not ī. No. 14, the letter s has no characteristic of a vowel about it; it is, indeed, a sound, but so is *any* continuous whispered consonant. No effort of the larynx is necessary to produce it, and without an exertion of the larynx there can be no vocal sound.

The letters y and w are entirely omitted. In the "*True Diphthongs*," No. 4, is yū, No. 5, yo̱, No. 6, yɐ̭, yɐ̱, and iə, and all the other combinations with y, as well as all those with w, are omitted. Among the ccmpound consonants, the examples for gz are imperfect; as Xerxes= zɐ̱rksīz, and gzɐ̱rksīz. From the imperfection of this alphabet, composed by one who has, in so many respects, established a claim to be considered as a good observer, we are forced to conclude that he did not pay much attention to this portion of his subject.

2.—*Latham.*

We take this alphabet from Prof. Latham's *English Language*, p. 150. It only differs in the order of the elements from that given in his *English Grammar*, which was published subsequently:—

" The vowels belonging to the English language are the *twelve* following:—

1.	that of *a*,	in	*father.*	7.	that of *e*,	in	*bed*
2.	„ *a*,	„	*fat*	8.	„ *i*,	„	*pit*
3.	„ *a*,	„	*fate*	9.	„ *ee*,	„	*feet*
4.	„ *aw*,	„	*bawl*	10.	„ *u*,	„	*bull*
5.	„ *o*,	„	*not*	11.	„ *oo*,	„	*fool*
6.	„ *o*,	„	*note*	12.	„ *u*,	„	*duck*

" The diphthongal sounds are *four*:—

1.	that of *ou*,	in	*house.*
2.	„ *ew*,	„	*new.*
3.	„ *oi*,	„	*oil.*
4.	„ *i*,	„	*bite.*

" This last sound being most incorrectly expressed by the single letter *i.*

" The consonantal sounds are, 1, the two semivowels; 2, the four liquids; 3, fourteen out of the sixteen mutes; 4, *ch* in *chest*, and *j* in *jest*, compound sibilants; 5, *ng*, as in *king*; 6, the aspirate h. In all, twenty-four:—

1.	*w*,	as in	*wet*	13.	*th*,	as in	*thin*
2.	*y*,	„	*yet*	14.	*th*,	„	*thine*
3.	*m*,	„	*man*	15.	*g*,	„	*gun*
4.	*n*,	„	*not*	16.	*k*,	„	*kind*
5.	*l*,	„	*let*	17.	*s*,	„	*sin*
6.	*r*,	„	*run*	18.	*z*,	„	*zeal*
7.	*p*,	„	*pate*	19.	*sh*,	„	*shine*
8.	*b*,	„	*ban*	20.	*z*,	„	*azure, glazier*
9.	*f*,	„	*fan*	21.	*ch*,	„	*chest*
10.	*v*,	„	*van*	22.	*j*,	„	*jest*
11.	*t*,	„	*tin*	23.	*ng*,	„	*king*
12.	*d*,	„	*din*	24.	*h*,	„	*hot.*"

We observe, as before, no distinction made between the short and stopped vowel; this is the general rule with all writers, the exceptions being very few. The vowels ê and ɐ̱ are omitted; and we find by some examples of spelling given by the Professor, that he does not recognize the vowel ə at all, not even confounding it with ɐ̭. With him it is ă or ĕ, &c., according to the usual orthography.

3.—*Smart.*

Mr. Smart is author of a Pronouncing Dictionary, entitled "*Walker Remodelled,*" but in effect a new work, differing in many particulars from Walker's well-known Dictionary. The following alphabet is prefixed by Mr. Smart; the notation is here translated, but the numbers affixed to the elements, and the examples, are his.

"THE ALPHABETIC VOWELS,

By nature long, though liable to be short or shortened.

	ACCENTED VOWELS.			UNACCENTED VOWELS.	
1.	ē,	as in g*a*te, g*ai*t, p*ay*	2.	*e*,	as in *a*erial, ret*ai*l, gatew*ay*
3.	ī,	,, m*e*, m*ee*t, m*ea*t	4.	*i*,	,, d*e*fy, ped*i*gree, gall*ey*
5.	ai,	,, w*i*de, def*ie*d, def*y*	6.	ai,	,, *i*dea, fortif*ie*s, fortif*y*
7.	o̱,	,, n*o*, b*oa*t, f*oe*, s*ou*l, bl*ow*	8.	*o*,	,, *o*bey, foll*ow*
9.	yū,	,, c*u*be, d*ue*, s*ui*t	10.	*yu*,	,, *u*surp, ag*ue*

THE ESSENTIALLY SHORT VOWELS.

11.	ă,	,, m*a*n, ch*a*pman	12.	ă, ə,	,, *a*ccept, chapm*a*n
13.	ĕ,	,, l*e*nt	14.	ĕ,	,, sil*e*nt
15.	ĭ,	,, p*i*t	16.	ĭ,	,, sawp*i*t
17.	ŏ,	,, n*o*t, c*o*mmon	18.	ŏ, ə.	,, p*o*llute, c*o*mmand, comm*o*n
19.	ɐ̭,	,, n*u*t, c*u*stard	20.	ɐ̭,	,, waln*u*t, circ*u*s
21.	ŭ,	,, g*oo*d, h*oo*d: *an incidental vowel*	22.	ŭ,	,, childh*oo*d : *an incidental vowel*

THE REMAINING INCIDENTAL VOWELS.

23.	ā,	,, pap*a*, *ah!*	24.	ə,	,, p*a*pa, mann*a*, Messi*ah*
25.	ō,	,, l*aw*, *awe*	26.	*ō*	,, jackd*aw*
27.	ū,	,, p*oo*l	28.	*u*,	,, whirlp*oo*l, cuck*oo*
29.	ōi,	,, t*oi*l, b*oy*	30.	ōi,	,, turm*oi*l, footb*oy*
31.	au	,, n*ou*n, n*ow*, br*ow*n	32.	au,	,, pron*ou*n, nutbr*ow*n

THE VOWELS WHICH TERMINATE IN THE GUTTURAL VIBRATION;

By Nature long, though liable to be shortened.

33.	*ar*=ār,	,, *ar*dent	34.	*ar*=*a*r, ər,	,, *ar*cade, doll*ar*
35.	*er*, *ir*,	,, *er*mine, v*ir*tue	36.	*er*, *ir*,	,, comm*er*ce, tell*er*, nad*ir*
37,	*or*=ōr,	,, *or*der	38.	*or*=o̱r, ər,	,, stup*or*, sail*or*
39.	*ur*=ɐ̱r,	,, *ur*gent	40.	*ur*=ər,	,, sulph*ur*
41.	*are*=ēər,	,, m*are*	42.	*are*=*e*ər,	,, welf*are*
43.	*ere*=iər,	,, m*ere*	44.	*ere*=*i*ər,	,, atmosph*ere*

45. *ire*=aiər, „ m*ire*
46. *ire*=aiər, „ emp*ire*
47. *ore*=o̱ər, „ m*ore*
48. *ore*=*o*ər, „ there*fore*
49. *ure*=yūər, „ m*ure*
50. *ure*=y*u*ər, „ fig*ure*
51. *oor*=ūər, „ p*oor*
52. *oor*=*u*ər, „ black-a-m*oor*
53. *ower*=auər, „ p*ower*
54. *ower*=auər, „ cauli-fl*ower*

55. (') a slight semi-consonant sound between *i* and y consonant, heard in the transition from certain consonant to certain vowel sounds; as in lute (l'ūt), jew (dzh'ū), nature (nētsh'*u*r), g'arment, k'ind.

Scheme of the Consonants.

56. h, as in *h*and, per*h*aps, ve*h*ement.
57. w, (beginning a syllable, with or without aspiration) as in *w*e, be*w*are, for*w*ard, *w*heat = hweat.
58. y, (beginning a syllable), as in *y*ou.
59. s, as in *s*ell, *s*it, ma*ss*; *c*ell, fa*c*e, *c*it, *sc*ene, *sc*ien*c*e.
60. z, „ *z*eal, bu*zz*, ma*z*e.
61. sh, „ mi*sh*un, so spelled to signify the pronunciation of mission.
62. zh, „ vi*zh*un, so spelled to signify the pronunciation of vision.
63. tsh, „ *ch*air, ea*ch*, ma*tch*.
64. dzh, „ *j*og; *g*em, a*g*e, *g*in.
65. f, „ *f*og, cu*ff*, li*f*e.
66. v, „ *v*ain, lo*v*e.
67. th, „ *th*in, pi*th*.
68. dh, „ *th*en, wi*th*, brea*the*.
69. l, „ *l*et, mi*ll*, sa*l*e.
70. m, „ *m*ay, ha*mm*er, bla*m*e.
71. n, „ *n*o, ba*nn*er, tu*n*e.
71. N, „ ri*ng*.
73. r, (as audibly beginning a syllable, or being one of a combination of consonants that begin a syllable) as in *r*ay, e*r*ect, flo*r*id (= flo*rr*id), to*rr*id; p*r*ay, sp*r*ead. Under other circumstances, the letter is a sign of mere guttural vibration.
74. p, as in *p*o*p*, su*pp*er, ho*p*e.
75. b, „ *b*o*b*, ru*bb*er, ro*b*e.
76. k, „ *k*ing, ha*ck*, ba*k*e; anti*c*, *c*at, *c*ot, *c*ut, *c*laim.
77. g, „ *g*ap, *g*ot, *g*un, *gu*ess, pla*gue*, *g*rim.
78. t, „ *t*en, ma*tt*er, ma*t*e.
79. d, „ *d*en, ma*dd*er, ma*d*e."

The operation of accent is very particularly considered in this alphabet, and it will be immediately observed that the unaccented long vowels correspond with our short vowels, and the "essentially short vowels" answer to our stopped vowels, which may occur in accented or unaccented syllables. Mr. Smart gives *two* values to No. 12, first, true ă, and second, ə; the first occurs in *a*ccept=ăksĕpt, the second in chapm*a*n=tshăpmən. To our ear, silent=sailənt, and not sailĕnt; but ĕ is found in some unaccented syllables, as *wallet*=wŏlĕt, *madness*=mădnĕs. For No. 18, Mr. Smart also gives two vowels, ŏ and ə; *pollute*=pŏlūt (or pŏl'ūt, as he gives it), *command*=kəmānd. Again, No. 24 does not differ from ə. The effect of r upon a preceding vowel, Mr. Smart finds to be so important as to require a complete set of vowels for its development; most of these he makes compounds of some vowel and ər or ɐ̱r, of which he tells us that when the r is removed, the sound does not differ from *u* in *nut*. We differ from him in this respect, as may be seen by our observations on the quasi dipthongs, pp. 86, 87. We cannot distinguish No. 35 from ɐ̱r, or No. 36. from ər. Mr. Smart tells us that it "lies between No. 41 (which *he* makes ēər, and *we* make êr) and No. 39, ɐ̱r, and in mere theory would not be distinguished from the former," and that it is "an element of syllables which, orally, the *vulgar-bred Londoner* never uses:—he is "*your* sārvənt," or, "*your* sɐ̱rvənt;" he speaks of "mɐ̱rs*i*" and of "vɐ̱rtsh*u*," and says "*it is* ɐ̱rksəm *to be restrained from* mɐ̱rth," but sĕrvənt, mërs*i*, vërty*u*, ërksəm, and mërth" (using ë for Mr. Smart's incomprehensible vowel), "are delicacies of pronunciation which prevail only in the more refined classes of society. Even in these classes, sɐ̱r, dɐ̱rt, and bɐ̱rd, &c., are the current pronunciation of *sir*, *dirt*, *bird*, &c.; and, indeed, in all very common words, it would be somewhat affected to insist on the delicacy referred to." (Principles, par. 35.) See suprà, p. 49, note 7. At the risk of being set down as a "vulgar-bred Londoner," we must own that we have never heard this vowel, although we *have* heard affected purists say sêrvənt, mêrs*i*, êrksəm, mêrth; but we regard this pronunciation as thoroughly erroneous. No. 55 is a recognition of the weakened consonants, on which see suprà pp. 127, 8.

4.—*Pitman.*

Mr. Isaac Pitman, of Bath, as most of our readers are probably aware, has invented *two* alphabets altogether different in their appearance, the one being adapted to the wants of the rapid writer and the other to those of the printer. The difference in the nature of these wants occasions some difference in the method of symbolisation; thus in the printed alphabet y and w are used separately, in the written they are always combined with the following vowel. As however we have only printed alphabets to compare this with, we shall select the printed or Phonotypical alphabet for consideration, first examining it with reference to the powers, and lastly to the forms, of its symbols.

The symbols in this alphabet (omitting the contractions and diphthongs) correspond to ours thus :—

Long Vowels.	ī ē ê ā ō ɤ̱ o̱ ū
Short Vowels.	*i e* - *a o* ə *o u*
Stopped Vowels.	ĭ ĕ - ă ŏ ɤ̮ - ŭ
Coalescents.	y w
Breathing.	h
Mutes.	p b, t d, k g
Semivocals.	f v, th dh, s z, sh zh
Liquids.	l, r
Nasals.	m, n, ɴ

In practice, the short vowels are only distinguished from the long by means of the accent, and the accent itself is frequently omitted. Yet in printed works its place is supplied by certain fixed rules, so that the distinction between the long and short vowels is in effect always made. The stopped vowels are carefully distinguished by different forms. The two values of r are not distinguished, first because their difference is considered a mere vice of pronunciation, and secondly because the rule for discriminating them is so easy; namely, r before a vowel is trilled, but otherwise not.

2nd. We now come to the question of symbols. The forms best adapted for the letters of the Phonotypical Alphabet have been the subjects of many experiments for more than a year and a half, made chiefly by Mr. I. Pitman, and the author of this essay, conjointly. Taking the forms of the Roman Alphabet as a basis, we determined to use these letters according to the *powers* which they *most usually* bear in the *English* language alone (disregarding their alphabetic names), and for the additional sounds to supply signs resembling the Roman characters as much as possible, so that the printed appearance of the whole mixed set of types might be uniform and pleasing to the eye. Considering the accent to be sufficient for distinguishing the long from the short vowel, we formed two classes of vowel characters, called the *full* (which represent long or short vowels according as they do or do not occur in accented syllables), and the *stopped*. The three Roman vowel types, i, e, o, are used for ĭ, ĕ, ŏ, respectively, being the sounds they by far most frequently represent in our language. Corresponding to these we have the full vowels, ɩ, ε, ɵ, which, when accented, are equivalent to ī, ē, ō, and when unaccented, to *i*, *e*, *ō*, respectively. The type ɑ, being borrowed from the italic alphabet, and merely varied in the same way as the Roman o differs from the italic *o*, is used for ă, while the usual a is retained for ā when accented, and *a* when unaccented, as a is the form under which this sound almost invariably occurs in English. The type u is used for a full vowel, representing ɐ̱ when accented, and ə when unaccented. This vowel has no recognised representative in any European language, and after many experiments it was found that u was most suggestive of the sound to the common English reader. The corresponding stopped vowel ɐ̭ is symbolized by ų, which is only a slight variation of u, its usual English form. For o̱, we have ω, bearing a manifest resemblance to o, which, though the common representative of this vowel, we had been obliged to reserve for ŏ, for which it is used still more commonly; for the stopped sound of this vowel, which only occurs in foreign languages, we employ ɷ, which is merely the former inverted. The vowels ū, ŭ, are represented by the varieties ɯ, ɯ. The vowel ê, which lies between ē and ā (or, in phonotypes, ε and a) is represented by the form æ, which partakes of both the others, and which is used for this sound in the German language. The vowels, then, are:—

Full { *Long.* ɩ̍, ε', æ, a', ɵ', u̍, ω', ɯ̣', = ī, ē, ê, ā, ō, ɐ̱, o̱, ū.
Full { *Short.* ɩ, ε, — a, ɵ, u, ω, ɯ, = *i*, *e*, - *a*, *ō*, ə, *o*, *u*.
Stopped. i, e, — ɑ, ɷ, ų, — ɯ, = ĭ, ĕ, - ă, ō, ɐ̭, o̭, ŭ.

The accent is, however, rarely printed except on ɩ̍, u̍, and generally on the latter only. The breathing h, and y, w, p, b, t, d, c, g, f, v, s, z, l, r, m, n, are used according to their most frequent values, *i. e.*, as we have used them, with the exception of c, in the Transition Alphabet. C is preferred to k, both on the score of its superior elegance of form, and of its being more generally used in the present system of spelling; to which we may add that the original Latin sound of c was k, that it is so used in Anglo-Saxon, Welsh, and Gaelic; and that the use of cw for qu (as cwωƭ for *quoth*) is merely a *restoration* of the old orthography, and no *innovation*, as kw would be. We still want simple signs for th, dh, sh, zh, and ɴ. These are accommodated by ƭ, đ, ʃ, ʒ, ŋ; of which ƭ may be considered as a Romanized form of the Greek ϑ turned the other way about; and đ is an alteration of the Greek δ, or the corresponding Anglo-Saxon letter; ʃ, ʒ, ŋ, are evident varieties of s, z, n. To represent the diphthongs, two stopped vowels are used in succession, as ɑi, ei, oi, ɷɯ. These characters would, therefore, be *sufficient* to write the English language with. But there are some frequent combinations, which, as they are often represented by single characters in the present orthography, it was judged to be best to express by single types in the improved alphabet. Thus the proper diphthong ai, the improper diphthong yū, and the compound sibilant dzh, are usually represented by the single letters i, u, j. To dzh, we add its correlative whispered sibilant tsh, and we complete the triad of proper diphthongs by adding ōi and au. We have hence introduced six contractions, namely, į, ∂, ɤ, ꝡ, ç, j, for ai, o̱i, au, yū (or y*u*), tsh, dzh, respectively, reserving ai for the Transition diphthong āi. Of these forms, į is a clear variation of i; ∂ may be regarded as a contraction of oi, which is more manifest in its capital form, Φ; ɤ is a Greek ȣ romanized (ȣ being, as the English pronounce Greek, equivalent to au); ꝡ is yɯ contracted, by simply affixing the tail to represent the y, and changing ɯ into w, for the better joining on of the tail; ç is a variation of c, the form under which this sound is represented in Italian, and part of the form (ch) under which it most generally occurs in English; while j is the usual English letter employed in its usual sense.

The order in which the phonotypes (as we term them) are arranged differs slightly from that of the Transition Alphabet, and is as follows, the accented vowels being omitted:—

Capitals. Ɩ I, Ɛ E, Æ, A Ɑ, Θ O, U Ų, Ω, Ɯ Ɯ; Ɨ, Φ, Ɤ, Ψ; Y, W, H.
P B, T D, Є J, C G, F V, Γ Ƌ, S Z, Σ Ʒ; L, R; M, N, Ŋ.

Lower Case. ɩ i, ɛ e, æ, a ɑ, ɵ o, u ų, ω, ɯ ɯ; į, ∂, ɤ, ꝡ; y, w, h.
p b, t d, ç j, c g, f v, ŧ đ, s z, ʃ ʒ; l, r; m, n, ŋ;

corresponding respectively to the Transition Symbols,

ī ĭ, ē ĕ, ê, ā ă, ō o, ɐ̱ ɐ̭, o̱, ū ŭ; ai, ōi, au, yū; y, w, h.
p b, t d, tsh dzh, k g, f v, th dh, s z, sh zh; l, r; m, n, ɴ;

while, as before stated, ī *i*, ē *e*, &c., are both represented by ɩ, ɛ, &c., according as these characters are accented thus, ɩ', ɛ', &c., or not.

The rules which have been laid down for the omission of the accent render it scarcely necessary to write it in any case, and in the following example we shall omit it altogether, though it is as well to observe that a is always accented, and u never, except when preceding an r which is not followed by a vowel, when it is generally but not *always* accented (thus in prizurv, u is accented, but not in cɑvurn). The language is supposed to be familiar to the reader, so that if he were to lay a wrong accent upon a word he would be able to correct himself by discovering either that no English word resulted, or only such a one as would make nonsense. When, however, words occur which are not familiar to the reader, or when there would be ambiguity occasioned by the omission of the accent (as Θ'gųst, ɵgųst') the accent should be marked, unless proper rules, well known to the reader, supply its place. We consider it necessary to introduce a specimen of this style of printing; but in order not to occupy space which should be devoted to other subjects, we shall exemplify the use of this alphabet by printing the remainder of this Part in accordance with it.

3rd. Đi ŧurd cwesçun hwiç wi had tɯ cunsidur woz ¿ Iz it posibul ɵr ecspidiunt tɯ briŋ suç an alfubet az đis intɯ comun ys?” Ɑlfubeticul ritiŋ woz surtinli intended ɷrijinuli tɯ bi ɛ gịd tɯ đi sɞnd ov wurdz, and đat ɷnli; hweđur at furst sufiʃunt utenʃun woz pɛd tɯ đis pȯnt, hweđur đi furst alfubet woz purfect, dụz not nɞ admit ov satisfacturi investigɛʃun; bụt it wɯd sim at eni rɞt đat đi vɞil dipartmunt woz mụç disrigarded, and purhaps not ivun ɵl đi consɷnunts wær propurli discriminɛted. Đi furst Finiʃiun alfubet simz tɯ hav travuld intɯ Ɏrup, and tɯ hav risivd udiʃunz from đi Grics, from hɯm it past tɯ đi Latinz, hɯ ugɛn sụmwot ɵlturd đi fɵrmz, hwịl đi rest ov Ɏrup haz folɷd đi Latinz scærsli dæriŋ tɯ mɛc eni ɵlturɛʃunz ɵr udiʃunz. Bụt it woz not tɯ bi supɷzd đat đi laŋgwijiz ov ɵl đi nɛʃunz hɯ đụs embrɛst wụn and đi sɛm set ov caructurz cunsisted ov đi sɛm elimenturi sɞndz. On đi contruri wi nɷ đat ov đi prezunt nɛʃunz hɯ yz đi Rɷmun alfubet, (nɛmli đi Iŋgliʃ, Swidiʃ, Dɛniʃ, Jurmun, Frenʃ, Italyum, Spaniʃ, Pɵrtygiz), nɷ tɯ hav đi sɛm naçurul alfubet. Hens đi sɛm caructur woz yzd bị difurunt nɛʃunz in difurunt sensiz. Bụt đis woz not ɵl; az đi nụmbur ov sɞndz jenuruli ecsided đat ov đi caructurz, đi sɛm caructur woz yzd on difurunt ocɛʒunz tɯ reprizent difurunt sɞndz in đi sɛm laŋgwij, ụntil at last (az egzibited at best—ɵr wurst—in ɞur ɷn siŋgylurli misspelt laŋgwij) đi culecʃunz ov simbulz constitytiŋ wurdz cɛm tɯ bi reprizentutivz ov ịdiuz, widɞt haviŋ eni cunecʃun wiđ đi sɞndz riuli ụturd. It iz yʒɯul tɯ tec ov đi dificulti ov lurniŋ đi Ȼịniz ritun laŋgwij, on ucɞnt of đi nụmbur of simbulz and đi wont ov cunecʃun bitwin điz simbulz and đi wurdz corispondiŋ tɯ đem; yet đi Iŋgliʃ laŋgwij iz far mɵr cɷpiụs đan đi Ȼịniz, and ɞt ov đi 50,000 wurdz, ov hwiç it iz sed tɯ cunsist, đær iz scærsli wụn, đi prɷnụnsiɛʃun ov hwiç, eni wụn cɯd ges, hɯ ɷnli ny đi alfubeticul caructurz and đi nɛmz bị hwiç đɛ ar jenuruli cɵld—eni forinur fɵr egzampul. Đær can bi nɷ dɞt đat đi Iŋgliʃ and Ȼịniz ar đi tɯ mɷst dificult laŋgwijiz tɯ lurn tɯ rid, bụt Ȼịniz iz iziur tɯ spel đan Iŋgliʃ, bicɵz tɯ spel đi Iŋgliʃ wurdz, surtin caructurz ar jȯnd tɯgeđur hwiç ar supɷzd tɯ reprizent sɞndz, and in fact dinɷt niđur sɞndz nɵr ịdiuz; hwịl đi Ȼịniz caructurz, widɞt pritendiŋ tɯ reprizent sɞndz at ɵl, efecçɯuli dɯ reprizent đi ịdiuz ov đi rịtur. Yet, in spịt ov đis dificulti, đær ar nɷ tɯ cụntriz in hwiç đi nolij ov ridiŋ and rịtiŋ iz mɵr prevulunt đan Iŋglund and Ȼịnu. ¿ Dụz not đis sim tɯ argy đat đær iz đærfɵr nɷ nisesiti tɯ mɛc eni ɵlturɛʃun—đat ridiŋ and rịtiŋ ar izi inụf? Tɯ đi furst cwesçun, wi ripli, đat it rađur ʃɷz đi caructurz ov đi tɯ nɛʃunz, hɯ hav sɷ manfuli struguld ŧrɯ đi dificultiz impɷzd upon đem, bicɵz đɛ dizịrd lurniŋ and comurs, niđur ov hwiç cɯd bi carid tɯ eni ecstent widɞt ɛ nolij ov điz arts. Tɯ đi secund, wi wɯd incwịr hweđur ridiŋ and rịtiŋ cɯd bi tɯ izi? Ɛ man hɯ can spic indifuruntli iz ɛbul tɯ dɯ ɛ vast dil mɵr đan wụn hɯ iz dụm; bụt, if hi stụturz ¿hɯ ŧiŋcs ov sɛiŋ hi spics izili inụf? ¿Ɵt not evuri wụn tɯ bi ɛbul tɯ spic ɑnd hir wiđ đi ụtmωst redines ɑnd iz, sω đat niđur đi wụn nor đi ụđur ʃɯd sɯn wiri him? ɑnd ¿hwot ɑr rịtiŋ ɑnd ridiŋ bụt spiciŋ ɑnd hiriŋ? Đi ritun wurd spics tɯ milyunz tɯ hɯm đi spωcun wurd cɯd nevur riç, spics tɯ milyunz hɯ liv loŋ aftur đi vòs itself ov đi rịtur iz ded. Wi tɛc ụp ɛ volym ɑnd lisun tɯ ɛ discɵrs, bɵtur, ɑnd mɵr cụmfurtubli, đan if it wær dilivurd tɯ ụs bị đi liviŋ vòs; đi ded letur spics, ɑnd đi ị hirz.

Bụt hɤ tidiụs, hɤ leŋŧi đi prωses ov pɯtiŋ dɤn điz "ŧɵts đat briđ ɑnd wurdz đat burn!" Hɤ fy cumpɑrutivli ov đi meni hɯ fil nω dificulti in dilivuriŋ đær sentimunts ɑnd nωʃunz bị wurd ov mɤŧ, can rizolv tɯ entur upon đi lɛburz ov rịtiŋ! Cɯd wi ωnli mɛc rịtiŋ ɑz izi ɑz spiciŋ, hwot ɛ blesiŋ it wɯd bi, not ωnli tɯ oruturz ɑnd ɵŧurz, bụt tɯ evuri wụn hɯ wiʃiz tɯ spic tɯ frendz far uwɛ. Hɤ haz đi intrωdụcʃun ov đi Peni Pωstij Sistum mụltiplịd rịturz bị giviŋ đem ɑn izi wɛ ov sendiŋ đær cumyninịcɛʃunz; ɑnd ¿ can it bi ɛ matur ov dɤt đat đi nụmbur ov đωz hɯ rịt wɯd bi mụltiplịd ɵlmωst infinitli, if ωnli đi minz ov ecspresiŋ ɤur ŧɵts upon pɛpur wær rendurd iziur?

It iz, hɤevur, not đi fusiliti ov rịtiŋ ωnli, hwiç clɛmz ɤur cær. "Ɨ had rađur spic fịv wurdz wiđ mị ụndurstandiŋ, đat bị mị vòs ị mịt tiç ụđurz ɵlsω," sez wụn hɯ had mụç ecspiriuns in pụblic spiciŋ, ɑnd in rịtiŋ ɵlsω, "đan ten ŧɤzund wurdz in ɑn unnωn tụŋ," (1 Cɵr. 14. 19). ¿Hwot bɯts it đat y lɛ ɛ lịbruri bifɵr ɛ savij? ¿Hwot iz đi ωrijinul Bịbul in đi hand ov đi multityd ov crisçyunz? Ɛ mir ridul, pɛpur cụvurd wiđ scrɑçiz; đi arω-heded leturz ov Babilun. Đær iz nω ys in spiciŋ tɯ đi def. Đi ɑrt ov ridiŋ mụst bi ɑz izi, nɛ iziur đan đat ov rịtiŋ, ɑz it iz iziur tɯ hir đan tɯ spic. Milyunz ɑr plizd wiđ hiriŋ wurdz, đω đɛ cɯd nevur pɯt tɯgeđur ɛ simpul sentuns curectli. Ɑz meni milyunz mụst hav đær ịz gladund bị đi sịt ov elωcwunt wurdz, ɵlđω đɛ mɛ purhaps nevur hωp tɯ pen đi lịc.

Wi nɤ si hwot iz ricwịrd. Furst, ɛ sistum ov rịtiŋ hwiç ʃal bi veri izi; secund, ɛ minz ov mụltiplịiŋ đat rịtiŋ wiđ similur iz, ɑnd ŧurd, ɛ sistum hwiç ʃal bi mụç mɵr izi tɯ rid đan tɯ rịt. Tɯ efect đis last, ɑnd most impɵrtunt object, it iz absωlytli nesesuri đat đi simbulz emplòd ʃɯd ecspres đi sɤndz ɑnd not đi histuriz ov wurdz. Đi ịdiuz reprizented bi wurdz, ɑr in ɵl Yrωpiun laŋgwijiz closli bɤnd up wiđ đi sɤndz ov đωz wurdz. Đωz hɯ hav ɑz yet not lurnd tɯ rid, ωnli nω ɛ wurd ɑz ɛ siriz ov sɤndz, ɑnd it iz điz pipul, ɑnd not đωz hɯ hav bị dint ov pursivịruns ucwịrd ɛ fusiliti in ridiŋ đat wi mụst cunsidur in inventiŋ ɛ sistum ov rịtiŋ. Đi carụcturz mụst đærfɵr bi fy, ɵlwɛz fɵrmd in đi sɛm manur, urɛnjd in nit ɵrdur (sɛ in rịt lịnz), ɑnd iç sɤnd ɵr combinɛʃun ov sɤndz mụst, evuri ɛ sistum hwiç ʃal bi muç mer izi tu rid đan tu rit. Tu efect đis last and most impertunt object, it iz absolytli nesesuri đat đi simbulz emplȯd ʃud ecspres đi sɜndz, and not đi histuriz ov wurdz. Đi idiuz reprizented bi wurdz, ar, in el Yrupiun langwijiz, closli bɜnd up wiđ đi sɜndz ov wurdz. Đoz hu hav not az yet lurnd tu rid, onli no ɛ wurd az ɛ siriz ov sɜndz, and it iz đis clas ov pipul, and not đoz hu bi dint ov pursiviruns, hav ucwiurd ɛ fusiliti in ridiŋ, đat wi must cunsidur in inventiŋ ɛ sistum ov ritiŋ. Đi caructurz must đærfer bi fy, elwɛz fermd in đi sɛm manur, urɛnjd in nit erdur (sɛ in rit linz), and iç sɜnd er combinɛʃun ov sɜndz must, evuri tim it ocurz, bi reprizented bi wun and đi sɛm simbul. It iz cwit clir đen, đat đi grɛtest fusiliti in ridiŋ wil not rizult from eni sistum ov rapid ritiŋ, az bi no trɛniŋ can đi hand bi bret tu rit wiđ đi ricwiurd yniformiti, ecsept wiđ veri grɛt slones. But hir cumz đi glerius invenʃun ov printiŋ tu help us, and wi find đat bi sloli and luberiusli putiŋ tugeđur surtin metalic tips, el cast from moldz, purfect yniformiti ov upiruns can bi prodyst, and tɜzundz ov copiz tɛcun in an incredibli ʃert spɛs ov tim. Hens đi caructurz must not onli reprizent đi sɜndz ov wurdz, but, in erdur tu efect đi grɛtest fusiliti ov ridiŋ, must elso admit ov biiŋ "set up" bi ɛ cumpozitur. Cunsidurubul fusiliti ov ridiŋ mɛ bi hɜevur utɛnd bi ɛ sistum ov ritiŋ hwiç iz not cwit regylur, and wi ar đærfer led tu cunsidur hwot distiŋt fermz can bi mɛd wiđ đi grɛtest ecspidiʃun. Đi ansur tu đis cwesçun upon fonetical prinsipulz, led tu đi bytiful sistum ov "Fonogrufi," hwiç admits, in its most cuntracted ferm, ov biiŋ ritun az rapidli az ɛ public spicur dilivurz hiz wurdz, so đat đi pen cips pɛs wiđ đi vȯs. In đis stɛt, hɜevur, it iz rađur dificult tu rid, ecsept for đi ritur himself; but, bi ɛ litul subsicwunt cær, not umɜntiŋ tu mer đan ɛ veri smel fracʃun ov đi tim ricwizit tu mɛc ɛ fær copi ov eni discors, đi hol ripert mɛ bi rendurd veri lejibul tu đi practist i. It iz hɜevur, elwɛz mer dificult tu lurn tu rid đis cind ov ritiŋ đan đi uđur, bicoz, on ucɜnt ov đi cuntracʃunz, đi sɛm sɜndz ar not elwɛz ecsprest bi đi sɛm fermz, elđo đi sɛm fermz inværiubli ecspres đi sɛm sɜndz; đus iç sɜnd haz ɛ vuriuti ov sinz tu reprizent it, but no sin reprizents mer đan wun siŋgul sɜnd. From đis ritiŋ hɜevur, đi cumpozitur iz izili enɛbld tu set up hiz printed matur, hwiç riçiz đi last digri ov fusiliti fer đi ridur. It mɛ bi inturestiŋ tu ad, đat đi manyscript ov đis part ov ɜur esɛ, woz sent tu đi cumpozitur in đi fonografic caructur, đat iz, ritun in ucerduns wiđ đi sistum ov rapid ritiŋ just menʃund. And wi et tu obzurv, đat bi đi invenʃun ov Anustatic Printiŋ, đi ritun caructurz, hwiç mɛ bi fermd wiđ nitnes, muç mer rapidli đan đi prezunt loŋ hand ritun simbulz can bi scribuld, mɛ bi in ɛ fy minits transfurd tu ziŋc, and printed ef, so đat ivun đi lɛbur ov cumpoziŋ iz spærd; and đi tim and ecspens ov ritiŋ and multipliiŋ copiz ridyst tu ɛ minimum.

Wi hav đærfɵr efected,—furst, ɛ sistum ov ritiŋ, đi fusiliti ov ecsicytiŋ hwiç iz nirli upon ɛ par wiđ đat ov spiciŋ, and hwiç iz not dificult tɯ rid, tɯgeđur wiđ ɛ sistum ov printiŋ-tips hwiç mɛ bi set up from đis ritiŋ, and hwiç hwen printed ɵf, fɵrm wurdz, hwiç ar sɷ izi tɯ rid, đat nɷ çild wɯd bi mɵr đan ɛ fy dɛz in ucwiuriŋ đi art ov ridiŋ, and mɷst udults, ɷnli ricwiur ɛ fy ʊurz. Tɯ prizent điz sistumz tɯ đi nɛʃun iz lic mɛciŋ đi dum spic, and đi def hir.

Az far az ritiŋ iz cunsurnd, đi matur iz nɷ loŋgur an ecsperimunt; sevun ɵr ɛt yirz triul hav ʃɷn đat ɵl its pritenʃuns ar justifid in practis, and đat it iz posibul tɯ rit fɷneticuli wiđ muç grɛtur iz, bɷt tɯ đi ritur and ridur, đan tɯ rit unfɷneticuli.

At đi tim ov ʊur ritiŋ đis, di Printiŋ iz stil in its infunsi, đi fɵrmz ov đi tips haviŋ bin ɷnli just ficst, aftur đi lɛbur ov ubʊt tɯ yirz and ɛ haf bistɷd upon đem. Dyriŋ đis tim hʊevur, đi numbur ov ecsperimunts hwiç hav bin nesesurili mɛd, hav givun us ɛ digri ov confiduns in đi ultimet sucses ov đi invenʃun, hwiç purhaps it wɯd bi imposibul tɯ infyz intɯ đi mind ov đi ridur, tɯ hɯm điz linz cunvɛ đi furst intimɛʃun ov đi stɛt ov đi cwesçun. Yet, az far az đi fɵrmz ov đi tips, and đi practicubiliti ov wurciŋ suç ɛ sistum ov speliŋ ar cunsurnd, eni wun hɯ haz ucumpunid us đus far, wil bi ɛbul tɯ juj.

Grɛt fusiliti ov ritiŋ, and grɛt fusiliti ov ridiŋ; đis iz hwot wi biliv đi prɷpɷzd sistumz ov ritiŋ and printiŋ wil prɷdys. ¿Hwot dɯ đi prezunt sistumz efect? ¿Hʊ meni milyunz ov Ψrupiunz ar đær hɯ canot rid or rit; hʊ meni mɵr hɯ canot rit? ɵlđɷ đɛ mɛ bi ɛbul tɯ rid,(¹)—but in suç ɛ manur, đat if đɛ did not spic betur, wi ʃɯd hardli tiŋc đær pʊurz ov articylɛʃun enviubul. Hwil it iz nɷterius, đat đi practist ridur, ridz muç mɵr rapidli bi hiz i, đan hi can ɵdibli, and can ivun rid printed matur muç fastur đan hi can mɛc ɛ spiç; bicɵz in đi fɵrmur cɛs, hi haz ɷnli tɯ prɷdys tɷnz, and in đi latur, tɯ ɷrijinɛt idiuz ɵlsɷ.

Nʊ ¿hwot iz đi rizun ov đis lamuntubul fact đat sɷ fy pursunz can rid and rit? Wun grɛt rizun iz eviduntli, đat đi prezunt sistum ov speliŋ

(1.) From the criminal returns of the Metropolitan Police, for 1844, we find that, of 62,522 persons who were taken into custody, 13,720 males, and 11,136 females (or 24,856 in all), could neither read nor write; 24,800 males, and 8,572 females (or 33,372 in all), could read only, or read and write imperfectly; while only 3,366 males, and 431 females (or 3,797 in all), could read and write well; and but 467 males, and 30 females (or 497 in all), had received superior instruction. Thus about two-fifths could neither read nor write; while more than half could only read, or could read and write very imperfectly; and not more than 1-15th had acquired any thing like the rudiments of education. ? How can we be surprised that such people break the laws, and require the continual activity of a large body of disciplined men to keep them from becoming noxious to their fellow-countrymen ?

dųz not rigard đι sɤndz ov đι wurdz spelt; đɑt đι simbulz it emplɤz ar not simbulz ov đι elimunts ov sɤnd. Đis rendurz ridiŋ sω dificult đɑt menι çildrun, espeʃuli umųŋ đι pɯrur clasis, hɯ ωnli fricwent đι Infunt, Nɑʃunul, or Britiʃ Scɯlz, ar yirz bifɵr đɛ rid wiđ iz; wι min bifɵr đɛ ar ɛbul tɯ purfɵrm đι micɑnicul opurɛʃun ov ųturiŋ surtin sɤndz, hwen surtin simbulz ar plɛst bifɵr đem. Bųt đis iz ɛ far mɵr izi ŧiŋ đɑn,—givun ɛ sɤnd, tɯ reculect hwot picʏliur combinɛʃun ov simbulz iz emplòd tɯ reprizent it; in ųđur wurdz, ridiŋ iz mųç iziur đɑn speliŋ.(2) ¿Hɤ menι umųŋ đωz hɯ bωŧ rid ɑnd rịt wiđ tolurubul iz, spel evuri wurd hwiç đɛ ʏz curectli? Hardlι wųn siŋgul indivijʏul in Iŋglund dųz sω. Hardlι ɛ siŋgul Frenʃmun dųz sω. Veri menι Jurmunz dɯ not spel curectli; nɛ, ιvun menι Italyunz cɑnot mastur đis art, ɵlđω đær laŋgwij iz selibrɛted umųŋ Ψrupiunz fɵr its curectli fωneticul ɵrŧogrufi. (It iz not hɤevur curectli fωneticul bị ɛ loŋ wɛ.) Nɤ ¿iz not đis ɛ startliŋ trɯŧ? It wɯd bι izι tɯ invent misspeliŋz, ɑnd Mr. Hɯd (hɯz deŧ wι hɑv sin unɤnst hwịl đis ʃit woz pasiŋ ŧrɯ đι pres) haz ɵfun ʃωn wiđ hwot lʏdicrųs efect đis mɛ bi dųn, but wι ŧiŋc it best tɯ giv sum jenʏin egzampulz hwiç hɑv cųm ųndur ɤur ωn pursunul nolij. *Verrey*, *happey*, *Whiff* (Wịf), *whas*, *Wheak*, *aBout*, *levvon oclock*, *to Whords* (tɵrdz), *happeytit* (ɑpitịt,), *enneything*, *plas* (pliz), *Brot* (brɵt), *whaitted* (wɛted), *wiff* (wịf), *firneter* (furniçur), *teake* (tɛc), *commin* (cųmiŋ), *year* (hir), *Whaing* (wɛiŋ), *pounes* (pɤndz), *rit* (rịt), *reseve* (risiv), *palcle* (parsul, insurtiŋ l hwær it iz not hurd, ɑz in *psalm*, ɑnd ʏziŋ *cle* fɵr *cel*), *Horse Treliea* (Ɵstrɛliu), ets. Menι ov điz erurz clirlι uriz from utemtiŋ tɯ spel fωneticulι, ɑnd it mųst bι ωnd đɑt đι prωnųnsiɛʃun woz fricwuntlι inacʏret, yet bị nω minz sω far rimɯvd from đι ʏʒʏul prωnųnsiɛʃun, ɑz đι speliŋ iz from đι ʏʒʏul ɵrŧogrufi. Wι cɯd pic ɤt similur mistɛcs from đι Jurmun ɑnd Frenʃ rịtiŋ hwiç wι hɑv sin, bųt wι ŧiŋc đι ubųv Iŋgliʃ egzampulz ar sufiʃunt.

Đι efect ov đι prezunt sistum ov ɵrŧogrufi iz đen đis. Furst, wι dɯ not nω hɤ tɯ prωnɤns enι wurd ųntil it haz bin prωnɤnst tɯ ųs,—ɑz ɛ jenurul rɯl ųntil it haz bin prωnɤnst ɛ grɛt menι tịmz, sω đɑt đι sɤnd haz bicųm ɑt last indelibli cunected wiđ đι ʃɛp ov đι wurd. Ɩvun đen, wι ωnli tɯ ɵfun fịnd đɑt đι convurs haz not bin gɛnd, nɛmlι, đι ʃɛp ov đι wurd iz not indelibli cunected wiđ đι sɤnd, sω đɑt wι hɑv tɯ cumit tɯ memurι đι picʏliur mɑnur in hwiç đι frɛmurz ov ɤur ɵrŧogrufi çωz tɯ spel iç siŋgul wurd in đι laŋgwij; ɛ mωst Hurcʏliun tasc, ocʏpiiŋ menι yirz in đι lịf ov đι clevurest men, ɑnd absωlʏtlι ucompliʃt bị verι fʏ ɤt

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(2.) In the "*Plea for Phonotypy and Phonography,*" by the author of this work, he has endeavoured to calculate the degree of difficulty upon the data therein contained, and finds that it is $(3{\cdot}2)^n$ times more difficult to spell a word containing n sounds, than to read a word containing n letters, or combinations of letters.

ov đat numbur. Did wi nω đi nɛm ov eni man hɯ fər đi last ten yirz haz bin ɛbul tɯ spel evuri wurd hi haz had ocɛgun tɯ emplò, and đi pronunsiɛʃun ov hwiç hi ny curectli, wiđɜt asciŋ cwesçunz, lɯciŋ ɜt đi wurd in ɛ dicʃunuri, ər furst ritiŋ it dɜn tɯ si hweđur it lɯct rit, (ɛ fricwunt test, and hwot ɛ satir upon ɛ sistum ov ərtogrufi!) wi ʃɯd bi glad tɯ mɛc it publicli nωn; đis man wɯd bi indid ɛ finominun ov đi ræ̈rest ocuruns.

Wi hav sin đat lurniŋ tɯ rid in uoərduns wiđ đi prezunt speliŋ iz muç iziur đan lurniŋ tɯ rit; hens if wi rimɯv đi dificulti ov ritiŋ wi dɯ muç, and if wi sis tɯ purpeçyɛt đi sistum ov speliŋ, wi əlsω efect muç. But ¿hwot iz tɯ bicum ov đi mas ov çip printiŋ at prezunt in egzistuns, fər egzampul, not tɯ menʃun uđurz, đi Peni Tracts ov Çæmburz and đi Σiliŋ Volymz ov Nit, boŧ bɯnz tɯ đi pipul ov đis cuntri? Wi biliv đat đωz hɯ hav lurnd tɯ rid wiđ iz in đi fωnetic caructur, (tɯ dɯ sω, wɯd ocypi ɛ veri ʃərt tim), wɯd bi cumpæ̈riŋ wun siŋgul wurc (sɛ đi Ny Testumunt) printed fωneticuli, wiđ đi sɛm wurc az nɜ printed, lurn tɯ rid mωst bɯcs in đi prezunt speliŋ, hwil eni strɛ wurdz mit bi surçt fər in ɛ prωnɜnsiŋ dicʃunuri (wi ar ωblijd tɯ hav ɛ dicʃunuri tɯ tel us đi sɜndz ov ɜur alfubeticuli ritun wurdz ‡), sω đat in fact bi furst lurniŋ đi fωneticul alfubet, đɛ wɯd ucwiur đi art ov ridiŋ đi ωld caructur muç mər rapidli đan đωz hɯ bigin wiđ đi latur, and đus điz bɯcs wɯd not bi ləst. Not but hwot in đi cərs ov tim điz bɯcs wɯd çɛnj đæ̈r printed fərm, and đi ny volymz wɯd bi iʃyd in ɛ fωneticul dres. It wil bi ɛ dyti fər sum litul tim fər pursunz tɯ lurn tɯ rid đi prezunt sistum ov speliŋ, but not tɯ hav tɯ rit in it. Đωz hɯ can rid đi ωld caructur wɯd ucwiur fusiliti in ridiŋ đi ny in ten minits, sω đat đæ̈r cunvinyuns canot entur intɯ cunsidurɛʃun. Đi dificultiz ov speliŋ, đi veri grɛtest in ɜur laŋgwij, wil đus bi entiurli rimɯvd, and đi art ov ridiŋ wil bi rendurd muç iziur. (3)

Wi ŧiŋc đen đat it iz ecspidiunt tɯ introdys đi ny sistum ov ritiŋ and printiŋ:

1st. Bicəz it wil sɛv meni yirz ov lɛbur nɜ emplòd upon mirli lurniŋ tɯ rid and rit, đi tɯlz hwæ̈rwiŧ tɯ wurc ɜt nolij; and ulɜ đem tɯ bi mər propurli spent in lurniŋ đi ys ov đωz tɯlz.

2nd. Bicəz it wil sɛv muç tim nɜ ocypid in đi micanicul lɛbur ov ritiŋ.

3rd. Bicəz it wil entiurli rimɯv əl dificultiz ov speliŋ, and đus incalcylubli incris đi numbur ov riturz.

4ŧ. Bicəz it wil rendur đi ridiŋ ov ivun đi prezunt sistum ov speliŋ mər

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(3.) See this part of the subject considered at much greater length in the "*Plea, &c.*," referred to in the preceding page.

izi, sɷ đat nɷ bucs ɵlredi printed wil bi wɛsted; đɛ wil bi muç mɵr lejibul đan bucs nɤ egzistiŋ in đi ɷld ɵrŧogrufi prevulunt at đi tįm ov Єesur, and ivun muç lɛtur.

5ŧ. Bicɵz it wil prizurv đi prɷnųnsiɛʃun ov ɤur laŋgwij, hwiç ųndur đi prezunt sistum ŧretunz tɯ bi irevɷcubli lɵst.

6ŧ. Bicɵz it wil rendur đi acwiziʃun ov đi Iŋgliʃ laŋgwij, nɤ lųct upon az sɷ dificult, izi tɯ đi forinur. Ɤur gramur iz wųn ov đi iziest in đi wurld; it iz ɷnli đi prɷnųnsiɛʃun hwiç prizents eni dificulti, and đis iz mɛnli ɷiŋ tɯ đi speliŋ, hwiç efecçyuli disgįziz đi sɤndz ov đi wurdz đemselvz, and forinurz hɯ hav not (lįc Iŋgliʃ çildrun) lurnt tɯ spic Iŋgliʃ bifɵr đɛ lurnt tɯ rid, naçuruli ricwįur đi sɤnd ov đi wurd tɯ bi ripited meni tįmz ɵfnur đan đi Iŋgliʃ çild, bifɵr đɛ can ucwįur its sɤnd, and yet hav les opurtyniti ov hiriŋ it. Đi impertuns ov sprediŋ ɤur laŋgwij, and mɛciŋ its acwiziʃun izi, ivun in ɛ cumurʃul pònt ov vy ònli, iz veri grɛt. Bųt wi hav ųđur hɷps; "ɵldɷ" sez Dr. Rap (Fiziolɷji ov Spiç, volym 3rd, pɛj 157) "đi Frenʃ laŋgwij haz fɵr sençuriz bin đi comun laŋgwij ov Ψrup, in ɛ diplɷmatic and sɷʃul sens, yet it haz nevur obtɛnd ɛ furm futiŋ in larj tracts ov cųntri bįyond Ψrup; fɵr Frans woz not muç mɵr enturprįziŋ đan Ituli in colɷnįzɛʃun. On đi ųđur hand, Iŋgliʃ mɛ bi cunsidurd az đi laŋgwij ov đi wurld ɤt ov Ψrup, and đis idium hwiç bį ɛ bɷld micsçur ov Goŧic and Rɷmun elimunts, and bį ɛ fyʒun ov đær grumaticul fɵrmz hwiç đis rendurd nesusuri, haz utɛnd an incompurubul digri ov flɷiŋnes, upirz destind bį nɛçur, mɵr đan eni ųđur đat egzists, tɯ bicųm đi wurldz laŋgwij. Did not ɛ hwimzicul, anticwɛted ɵrŧogrufi stand in đi wɛ, đi yniversaliti ov đis laŋgwij wɯd bi stil mɵr evidunt, and wi ųđur Ψrupiunz mɛ estim ɤurselvz fɵrçynet, đat đi Iŋgliʃ nɛʃun haz not yet mɛd đis discųvuri." Ɤur prezunt ɵrŧogrufi iz ɛ veri scærcrɷ.

Wi ŧiŋc đat it iz posibul tɯ intrɷdys đi ny sistum ov speliŋ, rįtiŋ, and printiŋ:

1st. Bicɵz ov its grɛt cunvinyuns tɯ đi rįtur.

2nd. Bicɵz ov đi grɛt sųcses ov đi sistum ov rįtiŋ cɵld Fɷnogrufi, hwiç iz nɤ yzd bį meni ŧɤzund pursunz, ripɵrturz and ųđurz. Sɷ đat đær ar meni pursunz hɯ canot rįt loŋ hand disuntli, bųt hɯ ar dilįted wiđ đi fɷnɷgrafic ʃɵrt hand caructurz.

3rd. Bicɵz it iz ɛ sistem fɤnded upon truŧ.

4ŧ. Bicɵz it iz izi.

5ŧ. Bicɵz it iz advantɛjųs.

6ŧ. Bicɵz đi dizįur fɵr it bigan at đi rįt end; đi sistum biiŋ mɛnli sɵt aftur bį đɷz hɯ fil practiculi ɵl đi erurz ov đi ɷld wųn.

7t. Bicəz sω grɛt ɛ diziur haz əlredi bin criɛted tɯ si it ɣzd, đat ɛ sum ov muni haz bin subscribd sufiʃunt tɯ difrɛ đi ecspensiz utendunt upon đi nesesuri ecsperimunts in tipogrufi, and tɯ purçus đi fȣnt ov tips wiđ hwiç điz pɛjiz ov ȣur Esɛ, and ɛ cunsidurubul pərʃun ov đi muntli Fωnωtipic Jurnul ar printed.

8t. Bicəz đi wurcs ecsplanuturi ov đi sistum ov ritiŋ, cumand ɛ veri larj sɛl, and meni pursunz ar enɛbled tɯ urn ɛ livlihɯd bi tiçiŋ it, hwil publicɛʃunz in đi ritun caructur ar in grɛt dimand. Nȣ đat đi ecsperimunts on đi best mωd ov printiŋ ar cumplited, it iz rizunubul tɯ supωz đat đi printed wurcs wil, hwen publiʃt, cumand az grɛt ɛ sɛl.

Concluding Remark.

Here we conclude the "Alphabet of Nature," which we regret being obliged to lay before the public in such a very imperfect state. We have learned while composing it, to feel doubt upon many points, where at the commencement we felt certainty, and we fear that the interruptions which we have accidentally experienced during this period, added to the alteration in some of our views which additional reflection, during so many months, has produced, may have not a little contributed to destroy the harmony of the work. Such as it is, however, we offer it as our contribution to the cause of Phonetics, and hope that those who have the leisure and capacity for such investigations may be incited to undertake them for the purpose of finally composing a true "Alphabet of Nature," and not rest satisfied with a mere "Transition Alphabet," such as we have here displayed. There are many subjects which we have felt compelled to pass over, such as the laws which regulate the interchange of letters, the actual analysis of the spoken sounds in the various living languages, the laws of the evolution of some sounds from others, the structure of versification and the nature of rhythm and rhyme; while upon others we have been exceedingly brief, as quantity and accent, natural words, emphasis, foreign tone, &c. For most of these, and other points connected with them, we refer the student, who is able to read German, to Dr. Rapp's *Physiologie der Sprache*, (Physiology of Speech,) which we have so often quoted; a work rich in information, and, considering its great extent and the multifarious nature of its contents, surprisingly accurate. It is with great diffidence that we lay our own imperfect essay by its side, and request the indulgence of the reader.

Dorking, 18 Feb., 1845.

ADDITIONS AND CORRECTIONS.

ADDITIONS AND CORRECTIONS.

DURING the first Six Chapters of Part I. the accent is represented by an inverted period, or dot on a level with the top of the line, thus (·), placed at the end of the accented syllable; h is only used as a diacritical sign, and the aspirate is represented by ʜ.

In Chapter 7, note 1, page 91, we have changed these notations, and in all subsequent pages an *acute* accent (′) is used at the end of the accented syllable; ·h is the representative of the aspirate *after consonants*, and h elsewhere; while h simply, *after consonants*, is still a simple diacritical sign; and ʜ denotes the strengthened hard breathing, p. 92.

Note. (3 means the 3d line inclusive from the top of the text.
3) . . . . bottom „
[3 . . . . . top of the *notes*.
3] . . . . bottom „

The figures followed by a semicolon denote the page.

3;	[1	*For*	its position	*read*	its original position.
4;	[3	....	impingeing	....	impinging.
8;	[1	....	mo·likiul	....	mo′likyūl.
11;	(15	....	color	....	colour.
13;	[1	....	Kanyar də la Tur	....	Kànyār də la Tūr.
—;	[3	....	1		3
16;	[1	....	Savar	....	Sàvār.
18;	[1	....	pen·diulɐm	....	pen′dyulɐm.
—;	[4	....	Yu·viulɐ	....	Yu′vyulə.

20; (2 *Add as a note at the word "sound."*—Such a method of writing would be syllabic, and has been adopted by "Sīkwēyā," otherwise called George Guess, the inventor of the Cherokee or "Tsīlōgī" Alphabet, which consists of 85 characters, the first six representing vowels, and the remainder vowels preceded by consonants. There must of course be as many characters as there are syllables in the language, and it would be impossible to spell with such characters any words containing closed syllables for instance; 77 letters of the Cherokee alphabet are given in the *Phonographic Journal* for 1844, p. 74, whence it appears that the only letters required for printing the language correspond to our ā, ē, ī, ō, ū, ǥ, g, k, h, l, m, n, nh, c, w, s, d, t, y, = 19. This serves to shew the *practical* inferiority of the syllabic scheme even when applied to a very simple language.

20; 8) *for* By action, *read* By the action.

22; (11,12 *Expunge* "This argument .... chapter." The author has preferred considering this argument in his "Colloquy on the Writing and Printing Reformation," *Phonotypic Journal* for 1844, pp. 306—311, and "Plea for Phonotypy and Phonography," published separately.

23;	[1	*for*	1	*read*	3
33;	3)	....	*c*";	....	*c*″.
—;	[1	....	kiuklos	....	kyuklos
35;	(5	....	d″ flat	....	d‴ flat
37;	6]	....	Shtokhau·zən	....	Shtok·hau′zən
40;	12]	....	jazmü	....	jazmuŋ
41;	10]	....	sound	....	sounded
—;	[4	....	A"	....	A"
42;	2]	....	ᴍ, ᴧ, ɴ	....	mh, nh, ɴh
43;	8)	....	that the spoken	....	the spoken

44; (19 .... 1 3
46; [2 .... mŏnophthoɴgəl .... mŏnopthoɴgəl
49; 10) .... kyu*zo* .... kyūz*o*
56; (4 .... unaccentented .... unaccented
56; note 8, *add*—See Infrà, p. 140.
63; 7] *for* tongue) *read* tongue, or the voice)
64; 6] .... bonne .... bonne (fr.)
66; (7 .... most languages ... several dialects
69; [6 *Expunge the whole line.*
70; (12 *for* Sănd*e* *read* Sųnd*e*
71; (12 .... incarrying .... in carrying
—; (21 .... "Quantity" .... "Emphasis, Accent, & Quantity" p. 139.
73; 6) .... Camõ*es* .... Camões
81; 23) .... Part II. .... Part II. p. 152.

82; 8) *Add as a note.* It would be perhaps more correct to say that the German *eu* were oi, and not ōi, that is, were the *close* and not the *loose* diphthong. Perhaps even in English a delicate ear will distinguish the sounds in *boy*, *boil*, *oyster*. The German is most like the last. The first is often pronounced quite like a dissyllable ōi*i*. When a vowel or diphthong occurs in a final accented syllable, unprotected by any following consonant, the Englishman is very apt to split the sound into two syllables, and thus say ē*i*, ǫ*u*, ai*i*, ōi*i*, au*u*, for ē, ǫ, ai, ōi, au. Foreigners never commit this fault, and hence they keep these vowels much purer than the English.

86; (18 resembles ō. *Add as a note.* Similarly in the German *vor*, and other words where the theoretically correct pronunciation is fǫr, the more common spoken sound is fōr. We have observed Germans pronounce this word sometimes with ō and sometimes with ǫ in the same sentence, so that it is almost impossible to say what sound they mean to utter. The imperfection of the contact in r renders it very difficult for the ear to distinguish between fōr and fǫr, especially if the latter is kept well distinct from fǫer.

89; 16) for *Diphthongs.* read *Triphthongs.*
—; 10) .... *Diphthongs.* .... *Triphthongs.*

93; (16 *after* nasal ɴ, *add*, when following, and into the combination gn, when preceding a vowel.

96; 9) *for* relative weakened consonants *read* relative whispered consonants
—; 8) .... the whispered consonants .... the weakened consonants
99; (4 .... consonontal .... consonantal
103; 20) .... prodnces, ... produces.
104; (5 .... next,(.... next,)

109; 2) *The Dutch orthography of these words is* gav, geven, glijden, groot, dag, dagen, berg, volgen, volgt.

110; 11) *for* combinatian, *read* combination.
115; (1 .... ?ʻqʜ .... ? qh.
—; 2] .... ĕn·grāftēd .... ĕn·grāftĕd.

118; 10) *Add as a note.* In the preface to "A Collection of Hymns, for the use of Native [Ojibway] Indians, translated by Peter Jones (Kahkewaquonaby), Indian Missionary," we read, "There are sounds in the Ojibway [ǫdzhĭbwê] which the English letters do not exactly convey, such as between *b* and *p*, *d* and *t*, *g* and *k*, *s* and *z*, *sh* and *zh*, *gw* and *qu*, *ch* and *j*. Thus the Indian writer is liable to interchange one letter for the other when spelling the same word, and, consequently, that want of uniformity, always desirable, will sometimes appear [in the orthography]." We had an opportunity of speaking, for a short time, with Mr. P. Jones himself, an intelligent Ojibway Indian, when on his third visit to England (this year, 1845.) He seemed to have great difficulty in pronouncing these intermediate sounds, so as to keep them clear of either extremity, and they were more apt to fall into the spoken than the whispered variety. He told us he had great difficulty in pronouncing the English th; but was not aware of any difference between the *th* in *thigh* and that in *thy*. This will serve to show the difficulty he must naturally feel in distinguishing spoken from whispered consonants, and to connect the Ojibway with the German "indifferent *π*, *τ*, *κ*."

126; 13) *for* 'Z, *z*. *read* 'Z, z.

127; 17) *After* "especially *actors*," *add as a note.* This has not escaped the notice of our modern Aristophanes, *Punch*, who, in vol. 8, p. 150, proposes the following "INTERROGATORIES FOR PLAYERS. What do actors and actresses mean by saying "skee-yi," "blee-yew," "kee-yind," and "dis-gyee-ise," for sky, blue, kind, and disguise? Are the ladies and gentlemen in question aware that all these words are words of one syllable, except the last, which has two, and of which they make three? Are they ignorant of these facts? or do they think it fine or elegant thus to tamper with the QUEEN'S English? If they do, let PUNCH seriously assure them that they are mistaken; he very much wishes that they would break themselves of this habit, which he can never go to a theatre without being annoyed by. Especially has he to complain of certain 'walking gentlemen,' to whom he would feel greatly obliged if they would pay a little more attention to their 'Walker.'" Unfortunately for this last witticism, Walker, in the introduction to his dictionary, p. 160, says, "When this vowel [meaning the diphthong ai] is preceded by *g* hard, or *k*, which is but another form for hard *c*, it is pronounced as if an *e* were inserted between the consonant and the vowel; thus, *sky, kind, guide, guise, disguise, catechise, guile, beguile, mankind,* are pronounced as if written *ske-y, ke-ind, gue-ise, dis-gue-ise, cat-e-che-ise, gue-ile, be-gue-ile, man-ke-ind.*" If this was the pronunciation of Walker's day, it has ceased to be the pronunciation of the educated at the present day; even those who have the greatest inclination to it, do not alter the number of syllables, but only insert a y. *Actors*, however, have a kind of traditional stage pronunciation of many words, and rather represent the English of fifty years since than that of to-day.

128; (6 *before* "In French," *insert*, When the letter affected is l, we find that—
—; (8 *to* lh, *add as a note.* See the remarks on Dr. Rapp's l^2, infrà p. 171.
130; 12) *for* double as *read* double, as
134; [4 .... *chra'szcz* .... *chra͵szcz*
135; 17) *for* except k and g, (as *sack*, *egg*, *read* except b, k, and g (as *ebb*, *sack*, *egg*

141; 16) *for* 2021, *read* 2012. *(This error only occurs in a few copies.)*—There is some awkwardness in using a *higher* number to express a *lower* accent, and it was a feeling that the higher number should always express the superior accent, that led the 'reader' to make the error just corrected. We have been induced, by this circumstance, to believe that the following notation would be better:—Chief accent, 1; secondary, ½; tertiary, ¼, &c.; none, 0. The passage from Milton, on p. 141, will then be represented, as far as accents go, by

0 1 1 ½01½ 0 0 1
0 ½ 010 1 ½ 10 1
1 1 ½0 0 1 0 1 ½1
1 100 1

143; (8 *To* "the whole of the ancient Latin," *add as a note.* This is too general. The versification of Plautus, and of the Latins generally, before the introduction of Greek literature, appears to be *rhythmical*, or guided by the recurrence of accent, rather than of quantity. The quantitative versification had a comparatively brief sway in Italy, from B. C. 200 to A. D. 200; and even then it is probable that the *songs of the people* were rhythmical, and not quantitative. True, quantitative Latin poetry did not cease to be written, and is still written; but the whole construction of Latin verse is (*now*, at least) *artificial*, the distinctions of long and short being regulated by rule, and not by ear. An ingenious writer in the *Edinburgh Review*, vol. 6, pp. 363—377, endeavours to prove that even the Latin (and, perhaps, the Greek) quantitative verse was regulated by a rhythmical rule as well, so that, in fact, the rhythm gave the character to the verse, and the quantitative rules only served to prevent the recurrence of too many consonants on the one hand, and unaccented open syllables on the other; and he shews how the same laws of accent passed into modern verse, unencumbered by the rules of quantity. We annex the following quotation (*ib.*, p. 381), because it is an endeavour to show the nature of quantity, and its effects on *English verse*:—"Every ear accustomed to Latin sapphics, would observe the peculiar structure of the following lines, and object to them in English blank verse; yet they are in every respect such as frequently occur, excepting that the words all follow the Latin rule of accentuation, and that the arrangement of quantities, as well as accents, corresponds with that in a sapphic stanza.

ō lĭq′uĭd streă′mlēts tŏ thĕ maĭn′ rĕtūr′ning;
mūr′mŭrĭng wā′tērs, thăt ădōwn′ thĕ mōūn′tain
rūsh′ ŭnōbstrūc′tĕd; nĕv′ĕr ĭn thĕ ō′cean
hōpe′ tŏ bĕ trān′quil!

A good writer (although he might use the same combination of accents) would naturally shun such coincidence of temporal metre, not as being inharmonious, but as bearing a peculiar character which should be avoided in English blank verse. It will appear, by the following lines, which have the very same accentuation and the same cæsura, that a difference of quantities will destroy the resemblance to Latin sapphics:—

The heádlong tórrent from its nátive cáverns
Búrsting resístless, with destrúctive fúry
Roárs through the válley, wásting with déluge
Fórests and hámlets."

We must confess that our ears do *not* detect this great difference, although the greater number of consonants, by which the change of quantity is supposed to be affected, necessarily gives a different character to the latter lines, but not such a difference as we have been accustomed to consider *quantitative*.

Mr. Hallam (*Literature of Europe*, p. 39), "The early poets in the modern languages chiefly borrowed their forms of versification from the Latin. It is unnecessary to say that metrical composition in that language, as in Greek, was an arrangement of verses corresponding by equal or equivalent feet; all syllables being presumed to fall under a known division of long and short, the former passing for strictly the double of the latter in quantity of time. By this law of pronunciation all verse was measured, and to this not only actors, who were assisted by an accompaniment, but the orators also endeavoured to conform. But the accented, or, if we choose to call them so, emphatic syllables, being regulated by a very different though uniform law, the uninstructed people, especially in the decline of Latinity, pronounced, as we now do, with little or no regard to the metrical quantity of syllables, but according to their accentual value. And this gave rise to the popular or rhythmical poetry of the lower empire, traces of which may be found in the second century, and even much earlier, but of which we have abundant proofs after the age of Constantine. The well-known lines of Adrian to Florus" (he adds in a note) "and his reply, 'Ego nolo Florus esse,' &c., are accentual Trochaics, but not wholly so; for the last line, 'Scythicas pati pruinas,' requires the word *pati* to be sounded as an iambic. They are not the earliest instances extant of disregard to quantity, for Seutonius quotes some satirical lines on Julius Cæsar."—See Suet. J. Cæs. 49,51. The lines are in general unfit for quotation, but we give one, as a specimen of the accentual trochaic:

Ecce Cæsar nunc triumphat, qui subegit Gallias.

147; (16 *after* task, *add* especially for foreign words.
153; (2 *for* the end of the word *read* the penultim
154; 15) .. using a wrong symbol, ... having indicated a wrong sound.
155; Ex. I. col. 2, l. 10, *for* ditɐrmind, *read* ditɐr′mind.
———————— 15, .. *yu nifòrmli*, .. *yunifȍrmli.*
—— Ex. 2, col. 2, l. 3, .. yənə, .. yenə.
———————— 9, .. rejhəlmèsijhes, *read* rejhəlmêsijhes.

156; *Add as a note to the German example.* We have here given ǫ as the stopped sound corresponding to ō in German. Germans, however, are by no means consistent in giving it this sound, and we very frequently hear ŏ instead of ǫ, especially before kh, as nŏkh. Instead of vh, we may pronounce v, without fear of discovery, except by a very attentive ear, and one more alive to the discrimination of sounds nearly alike than that of the majority of Germans.

156; Ex. 3, col. 2, l. 8, *for* le raŋ .. àlōrs, *read* la raŋ .. àlor.
157; 10] *for* nor to reply, *read* or to reply.

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